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Indian Human Settlements Programme

25

Research Report

Assessment of Health Knowledge,
Practices and Services
in Delhi Slums

Voluntary Health Association (Delhi)
New Delhi

822-90-10569

**ASSESSMENT OF HEALTH KNOWLEDGE,
PRACTICES AND SERVICES
IN DELHI SLUMS**

Voluntary Health Association (Delhi)
New Delhi

**IHS
P** **Indian Human
Settlements
Programme**

HSMI

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**Indian Human
Settlements
Programme**

Under Indo-Dutch Technical Assistance

**Housing and Urban Development Corporation
Institute for Housing Studies, Rotterdam**

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PREFACE

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INDIAN HUMAN SETTLEMENTS PROGRAMME (IHSP)

The Indian Human Settlements Programme operates through a joint collaboration between Government of India and Government of Netherland. The collaborating institutions are the Housing and Urban Development Corporation (HUDCO), represented by its Human Settlement Management Institute (HSMI), and the Institute for Housing Studies (IHS), Rotterdam.

HSMI was founded by HUDCO in 1985 in order to provide training support to professionals working in the housing sector and to establish a forum for interaction between administrators, professionals, researchers and others engaged in human settlement related programmes. In addition to its own training and research activities at the national level, the Institute is actively engaged in promoting training capabilities at the State and local levels. The Institute also acts as a nodal point for interaction with various international and multilateral training institutions which provide pedagogic, faculty and training material support.

The Indian Human Settlements Programme (IHSP) aims at systematic development of training courses for mid career, middle management level professional personnel engaged in the planning, implementation and monitoring of provisioning of shelter, environmental improvement and community development activities for low income urban families. The programme draws upon recent national and international innovations in professional practice, new tools, methodologies, technologies and interdisciplinary working relationships, in order to increase the relevance of professional practice to the pressing needs of housing and urban development in the Indian context. The programme is supported by independent research documentation and case studies to strengthen the action oriented character of the training workshops.

Research Fellowships

The Indian Human Settlements Programme offers fellowships to support studies in the broad field of human settlements. The research fellowship is awarded to the principal researcher who is made responsible for the programme inputs and proper completion of the research. Emphasis is laid on developing case study materials and project impact assessment studies in support of its on-going training programme in various fields of human settlement development in India with special reference to the needs, aspirations and resources of low income families.

The IHSP Research fellowships are meant for action oriented research and documentation by professionals, groups of professionals and institutions who have working experience in the context of human settlement development or have been closely associated with formulation and implementation of projects. The aim of the fellowship programme is to reach and support professionals wishing to document processes of human settlement development, in order to project to a wider group the insight and accumulated experience acquired through an intimate exposure to such process over a period of time.

Subject Areas of Sponsored Research

A number of subject areas of reserach supporting ongoing IHSP workshops have been identified. The broad parameters for research in each subject area are as follows:

Settlement Design

Design of layouts of plot and dwelling, units in self help, sites and services and other types of housing project; delineation of roles and responsibilities of agencies and actors in implementation at the core housing stage and during progressive development of dwelling and infrastructure, physical improvement reblocking and reconstruction/reconstitution of existing settlements.

Neighbourhood Improvement & Slum Upgrading

Analysis of slums and squatter settlements and the potential for their improvement, community participation, employment creation and income generation, land tenure administration, opinions, strategies and methods of implementation of slum improvement programmes and slum upgrading project formulation.

Housing Project Finance

Tools of project decision making; cash flow analysis; estimation/forecast of affordability, demands, cost, subsidised revenues of a housing project; feasibility analysis of subsidised housing programmes; design alternatives and cost implication; mechanisms of cost recovery.

Low Cost Infrastructure

Designing of infrastructure, provision for low income settlements; management and implementation of low cost options in sanitation, water supply, drainage and garbage collection and disposal; analysis of technological options in terms of affordability, social acceptability and environmental conditions.

Participatory Construction Management

Planning of on-site works for implementation of projects with collaboration of community options in building materials and construction technology, identification of voluntary labour components, measurement of labour productivity; tendering of works; supervision and monitoring.

Urban Land Management

Analysis of land use, assembly, development, cost and pricing in different types of low income settlements, housing options and submarkets; channels and procedures for managing and funding land tenure and development programmes as supports for low income housing; interaction between formal, semi-formal and informal land supply mechanisms and bearing on low income housing delivery systems. Documentation of current land acquisition, development, allocation, utilisation and pricing policies/programmes and innovative alternatives; Documentation and analysis of land markets and impact on access to housing by low income families in projects; Documentation of land tenure situations and effect on housing situation; Documentation of land price determinants in different kinds of low income settlements, Case documentation of cash flows for land development in large integrated area development projects with a focus on land for shelter, Documentation of role of actors in supplying and developing land in formal, informal and semi-formal housing areas; Analysis of urban planning and development norms, standards and laws for impact on land development costs in low income housing areas.

Cost Recovery and Estate Management

Cost recovery aspect of slum upgrading and neighbourhood improvement programmes with an insight into the policy implications at an operational level. Also cost recovery along with estate management aspects of any typical housing agency like Housing Boards, Slum Boards etc. The following could form part of the proposal: Need for cost recovery; Policy issues and aspects of cost recovery for i) improvement & upgrading programme, ii) for other housing programmes; Issues of subsidies Vs. Cost recovery & replicability for Government housing programme, Affordability and cost recovery; Maintenance of records and information system for cost recovery, types of accounting; Analysis of information and management information system, Organisational aspects of estate management department; Penalties and incentive (action plan) for improving cost recovery and estate management.

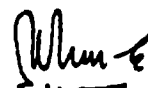
Computer Applications in Human Settlement Planning

Computers, as a basis for automated information systems and as a tool for modelling, can play a vital role in augmenting the capabilities of the implementing authorities to tackle human settlement planning and management effectively to assist imparting of the analytical capabilities of micro-computer based human settlement planning and management applications and to explore its effective role for implementation, required case study material will be in the following areas: Management information systems, Housing finance and fund management; Estate management & cost recovery; Socio-economic surveys; Graphics and statistical applications, Land subdivision; Utility net work; Affordability issues; Spatial analysis & geographical information systems

Acknowledgements

This research report is an outcome of the IHSP Research Cycle. The first and the second IHSP Research Cycle were managed by the National Institute of Urban Affairs with funds made available by the Government of Netherland, through the Institute for Housing Studies, Rotterdam I am happy to acknowledge the support provided by these institutions and research guidance made available to the researcher by the IHSP faculty.

It is hoped that these research reports produced under this action oriented IHSP sponsored research, will provide valuable information to all those engaged in shelter programmes.



SK Sharma
Chairman & Managing Director
HUDCO

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This assessment Study on Health Knowledge, Practices and Services in Delhi Slums is a combined effort of volunteers from a large number of institutions and organisations. A list may be seen in Annexures III-A and III-B.

We would specially like to thank :

- The office bearers of all the organizations/institutions, who responded spontaneously to our request.
- The Programme Officers of the National Service Scheme (NSS) in some of the Delhi University Colleges, Jamia Milia Islamia University and Jawaharlal Nehru University for taking an active interest in our study and motivating the students to participate.
- Ms. Kalyani Venkataraman and Mr. J.P. Das, Associate Researchers, who organized and conducted the orientation of all the volunteers and monitored and supervised the survey in 102 locations (very often in difficult situations)*.
- VHA(D) Members Dr. Ajay Kamath and Dr. Ashok Majumdar and Ms. Alka Malhotra for the post-study refresher workshops for the student volunteers.
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- Ms. Meera Basu for assistance in finalizing the basic tables and framework for data analysis.
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- UNICEF for financial support to train one of the Associate Researchers at the Workshop on NEIGHBOURHOOD IMPROVEMENT AND SLUM UPGRADATION conducted by Human Settlement Management Institute (HUDCO).
- Ms. Nirjala Tikoo to whom we are profoundly grateful for her time to recheck the data and to maintain our link with the large number of volunteers.

The Voluntary Health Association (Delhi) overcame the limited infrastructure for conducting this extensive assessment study on account of the overwhelming response of volunteer support from organizations and educational institutions.

The education potential for those involved — the volunteers and slum residents was evident at the outset and reinforced by orientations.

* When compared with DDA records, the numbers of plots/blocks differed in some resettlement colonies due to newly erected blocks. Numbers of blocks and sectors were confusing in different phases or sectors even to local residents.

We are most grateful to HSMI for giving us an opportunity to galvanize a sufficient number of Delhi citizens to participate in such a Study in the aftermath of the unprecedented cholera epidemic (1988).

Due to the time and financial constraints, VHA(D) was able to share findings with only 10 slum settlements before the onset of summer 1989. However, due to the involvement of more than 450 volunteers, and to our zonal meetings and exhibitions, the study attracted wide attention of the administration and other voluntary agencies. We believe this may have been an impetus to the present neighbourhood improvement and slum upgradation moves of the administration.

Purabi Pandey
Principal Researcher

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CHAPTER-I

INTRODUCTION

1.1 Slums in Delhi and their Environmental Conditions

The most visible change in Delhi in the last four decades has been the virtual swamping of the landscape by Squatter Settlements. Since 1947 the population has risen from 8 lakhs to 86 lakhs in 1988. A large proportion of this increase owes to migrants who are mostly rural and come from the neighbouring States of Rajasthan, UP, Haryana, Punjab, Madhya Pradesh and Bihar. A majority of these rural migrants end up in slums. According to official estimates, there are at present 749 Squatter or Jhuggi–Jhompri (JJ) Clusters with approximately 183,250 Jhuggis (See Table 1.1)

Table 1.1
Squatter Settlements in Delhi (1990)

Zone	No. of JJ Clusters	Approx. no. of Jhuggis
East	93	37,645
West	173	35,247
North	149	35,521
South	248	57,478
Central	86	17,359
Total	749	1,83,250

The decades of the seventies and the eighties will be recorded as the darkest in the chapter of Delhi's development for the total absence of any control on land speculation, building of political vote banks, and administrative neglect of elementary precautions related to the health and well being of the massive human influx who came to construct high profile office buildings, flyovers and five-star hotels.

The environmental and sanitation conditions in slums and squatter settlements have been commented upon as "undesirable" and "substandard" in reports of even official agencies. These settlements lack basic amenities like drainage and sewer lines, protected water supply, street lights and adequate numbers of community lavatories. For instance, the Comptroller and Auditor General of India reported that out of 251 JJ Clusters in East Delhi surveyed in December 1988, 250 had no drainage facilities.

The report of the National Institute of Urban Affairs (NIUA) on access to basic services says "The problem of civic amenities has been the subject matter of studies Government appointed Committees and Commissions, (most of which) however, do not take into account how the situation appears on the ground and tend to ignore citizen's reactions."

In Delhi, attempts have been made to resettle squatter families in specified areas developed as Resettlement Colonies. Sanitation conditions in even these areas leave much to be desired.

The construction of sewage treatment plants, appropriate engineering of drains and management of regular garbage disposal are public health matters which have been neglected for long and have caused incalculable damage to health of people, particularly of that segment of the population which provides basic services to the city - by working as construction workers, rickshaw pullers, load carriers, painters, carpenters, plumbers, domestic workers, sweepers and vendors. Squatter and resettlement colonies have become breeding grounds for diseases, disability and death. The grim reality was tragically exposed by the cholera epidemic of 1988 which had, by mid-August, affected 29,413 people, including 7,723 cases admitted to various hospitals 1,105 confirmed cholera cases, and 288 reported deaths (unofficial estimates put the figure at 1,500).

1.2 Health, Environment and the Community

Of the numerous issues inextricably interlinked with human settlements, those related to health and environment are, perhaps, most significant. The goal of health for all by the year 2001 was a principal outcome of the Alma Ata Conference, 1978 and India, along with other participating countries, is committed to pursue this goal as evident from its National Health Policy spelled out in 1982. This policy document was preceded by a significant Study* jointly conducted by the Indian Council of Social Science Research (ICSSR) and Indian Council of Medical Research (ICMR) in 1981. The recommendations of this study emphasise upgradation of environment in urban areas through proper education, full public cooperation, and involvement of Voluntary Organizations. A working group set up by the Planning Commission to evolve a plan outline and suggest specific programmes for the weaker sections, drawing upon this study, recognized that "the multi-dimensional development of the human being, and the integrated planned development of his surroundings, should be the core objective of all developmental efforts". It further conceded that proper health care being a matter of daily personal action of individuals and families, the upgradation of individual skills into community orientation and participation are vital in its pursuit. This is also in conformity with the Alma Ata Declaration which insists that health should be viewed as a component of comprehensive social and economic development at the local level based on local resources.

Two things thus seem to be generally accepted. First, a National Health Policy can evolve only within a fully integrated planning framework which seeks to provide universal comprehensive primary health care services, relevant to the actual needs and priorities of the country at a cost which it can afford by adequately utilising the services being rendered by existing agencies. Second, the planning and implementation of various health and

* ICSSR and ICMR : 'Health for All : An Alternative Strategy', 1981

environmental programmes can be achieved only through the organized involvement and participation of the community, so that the community members do not remain mere recipients of health and medical care, but, rather, involve themselves in all aspects and at each stage of the development of primary health care. In this regard the joint WHO–UNICEF report of the Alma Ata Conference states that there are many ways in which the community can participate in primary health care, ranging from involvement in assessing the situation, defining problems and setting priorities, through helping to plan primary health care activities, fully cooperating when these are being carried out by contributing labour as well as financial and other resources.

1.3 Background of the Voluntary Health Association (Delhi)

Voluntary Health Association (Delhi) (VHA(D)) was founded in early 1985 by a group of 18 Delhi residents to coordinate such activities as would lead to a deeper awareness of health care aspects in the National Capital Region with a view to promote Health for all with a fundamental option in favour of people at the lowest economic levels.

Upgradation of the environment and the Health Status of the community has been the primary concern of the VHA(D). The main thrust of its work has been in schools serving the children in the lower economic strata. Such activities in member schools as training of teachers, community surveys by children creation of health awareness in the community through Parent-Teacher Associations, etc, have brought the VHA(D) face to face with communities in a few resettlement blocks and in poorly located bustees. The comprehensive School Health Service covering promotive, disease-preventive and curative aspect of health care has also given the VHA(D) useful experience in respect of the state of referral services offered by the Administration.

The VHA(D) also lent support to the Administration during the unprecedented cholera epidemic of 1988. Besides facilitation of direct medical interventions, the VHA(D) was able to initiate a unique process which involved everybody in getting a more realistic insight into the socio-cultural-economic and political forces leading to deprivation in the lives of the poor.

The members of the VHA(D) have been facilitated in improving their concepts and skills by training workshops, camps etc., in partnership with one another. The resources of the Government have been tapped for socio-education, cultural and health inputs in programmes of the VHA(D).

1.4 Genesis of the present Study

In 1984, the National Institute of Health and Family Welfare (NIHFW) conducted a health and morbidity survey of 4 slums in Delhi with a view to evolve a health care delivery model suitable to the varying characteristics of urban slum population*. The Study found insanitary environmental conditions the most striking common feature. It noted high incidence of diseases, particularly malaria (attributable to puddles of stagnating water and open drainage) and diarrhoea, the incidence of which amongst children was about four times more than the

* NIHFW : 'Health Care Delivery Model in Urban Slums of Delhi', 1986.

national average (attributable to open drainage, open defecation, open refuse disposal and, above all, water from hand pumps rather than deep tube wells). It found that family planning practices were restricted to a meagre 19.5% of the eligible couples and that two of the four settlements did not have access to maternity and child health centres. The recommendation of the study revolved around six key issues : (i) good environmental sanitation, encompassing adequate housing, covered drainage, public latrines, facilities for refuse disposal, and piped water supply from deep tube wells; (ii) literacy and facilities for primary education; (iii) maternal and child health services; (iv) family planning and contraceptive practices; (v) inadequacy of privately registered/unregistered medical practitioners who exploited slum dwellers during emergencies, and (vi) need for social change amongst slum dwellers, a majority of whom attached greater significance to employment opportunities than to housing and sanitation. The Study recommended making available basic maternity and child health services, family planning guidance, immunization, etc. and ensuring diarrhoea control. It strongly advocated the creation of income generating opportunities for, especially, women in slums and of a movement for enhancing literacy by, among other things, concentrating more of the mass media messages on slum population. It also suggested a role for private voluntary organizations in covering certain slums for providing a wider range of activities and health facilities for, especially, slum women.

Unfortunately, the findings of the NIHFW Study were not taken sufficiently seriously by the service agencies and the voluntary organisations in Delhi, and the civic neglect that continued took a heavy toll of precious lives in the cholera epidemic of 1988. The erstwhile neglected tasks of sharing with community leaders, zonal civic officers, political representatives and common citizens the meaning and value of such carefully prepared reports, and of involving them in an enquiry into their own environment and in both availing and pressing for improvement in the quality, of the services offered to them by the Administration, became practical as well as urgent imperatives.

However, a major constraint to initiating any substantive intervention, and one that was noted by the NIHFW Study in its preface, was that there was "little information on various characteristics of health and disease conditions in such populations and the type of health facilities available and their utilization". One intention of the present study was to fill this information gap by assessing, in a fairly large number of slum and resettlement colonies, how much the representative community knows about health, what are their traditional practices, how do they receive the existing services, etc.

Again, as mentioned before, the VHA(D) was involved in relief activities in cholera affected areas in 1988 : In fact, during the peak of the epidemic, it was engaged in conducting a sample survey in Trans-Jamuna (East) and Dakshinpuri (South). The extent of ignorance about basic health issues revealed in the course of this sample study threw into sharp focus the need to prepare a strategy for public education on a wider scale. This became the second thrust of the present study. The research process adopted was one in which the questionnaires for the primary survey were administered by locally based voluntary organizations. It was felt that this could be instrumental in increasing health awareness, as well as critical to operationalizing the concept of self reliance, at the local levels.

The timing of the Study seemed appropriate as throughout Delhi everyone was anxious to escape from cholera and respondents were more cooperative than they might, perhaps, have been otherwise. The VHA(D) was also fortunate in receiving from the HSMI financial assistance for the Study and guidance in the preparation of the survey schedule, and from the UNICEF assistance by way of sponsorship of one of its members for participation in the HSMI's Workshop on Neighbourhood Improvement and Slum Upgradation.

1.5 Objective of the Study

In the context of the foregoing the specific objectives of the present Study may be spelt out as follows :

- to assess the health knowledge and practices and health services in slum areas of Delhi; and
- to simultaneously make slum residents and others better aware and participate in Neighbourhood Improvement and Slum Upgradation Schemes.

Inasmuch as the Study attempts to adopt a dynamic strategy to carry out a wide and integrated package of health education to concerned and affected people, it could be considered 'action research' rather than research per se.

1.6 Methodology

The Study involved primary data collection in Resettlement Colonies and Jhuggi-Jhompri Settlements. Imparting health education to the community simultaneously with data collection was emphasised.

For the purpose of data collection, a household survey was conducted in 102 settlements. The questionnaire used for the survey contained 93 questions organised in eleven sections covering (i) household information, (ii) sources of water, (iii) water purification practices, (iii) food habits, (iv) toilet facilities, (vi) medical facilities, (vii) garbage disposal facilities, (viii) waste water disposal, (ix) fuel consumption patterns, (x) housing conditions, and (xi) general awareness in respect of prevention of diseases, family planning methods, infant feeding practices, etc. (See Annexure - I).

The selection of the Study area was based on visits to cholera affected areas and discussions with affected families and local leaders, besides the Commissioner of the Municipal Corporation of Delhi, the Director of Public Health, Zonal Health Officers and Officials of the Delhi Development Authority (Slum Wing). Resettlement Colonies and Jhuggi-Jhompri Settlements in Delhi were classified on the basis of geographical location by dividing the city into five zones i.e. East, West, North, South and Central. Zonal meetings of citizens were organised. The settlements were further classified on the basis of the numbers of plots/hutments in them (100-500, 500-1000 and 1000 and above). Finally, twenty four resettlement colonies and seventy eight squatter settlements were selected (See Annexure-II).

Population statistics pertaining to the selected settlements were obtained from the Slum Wing of the DDA and preliminary field visits made to several areas to collect basic information. Initially it was proposed to cover 8,900 households. However in course of the surveys many of the squatter settlements/hutments enumerated in the DDA's list, from which the sample size was drawn, could not be located. Finally, a total of 4509 households were covered. The sample size was approximately 100 households in areas with 100-500 plots, 150 households in areas with 500-1000 plots and 200 households in areas where the number of plots exceeded 1000. The households surveyed were randomly selected.

The questionnaires were administered by health workers, mothers, teachers, older school children, members from youth organizations, etc. In all a total of 2000 students from the NSS Departments of 12 Colleges of the Delhi University and the Jamia Milia Islamia, 19 senior students of two Schools, and 250 workers from 32 Voluntary Organizations (including the VHA(D)) participated in the assessment Study (See Annexures : III-A and III-B for details). Through a full days workshop the volunteers were given a thorough orientation not only in data collection and filling of questionnaires, but also on various aspects of health care and basic sanitation practices covered in the survey.

As far as practicable, a close monitoring of data collection work was done by two associate researchers. However, the data thus collected, like any other from primary sources, may suffer from certain degrees of investigator's bias, recall lapse or even misreporting.

1.7 Structure of the Report

The Report comprises five Chapters including the present introductory chapter. Chapter II presents a profile of the surveyed households in terms of their demographic characteristics, educational levels, incomes, and housing conditions. In Chapter - III data pertaining to access to health and related facilities are reported. Chapter IV puts forth findings in respect of health knowledge and practices. In the final Chapter, a summary of observations can be found.

CHAPTER II

DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS

2.1 Introduction

In this Chapter, a demographic profile of the 4509 sample households is presented. These sample households include 1655 from Resettlement Colonies (RC) and 2854 from Jhuggi-Jhompris (JJ). The total population in these households comes to 21645, of which 54.9% (11883) are males and 45.1% (9762) are females (ie., a sex ratio of 821 females per 1000 males). The average household size comes to 4.8. About a sixth of the sample households were affected by diarrhoea during the cholera epidemic in 1988 (See Table 2.1)

Table 2.1
Distribution of Sample Households according to whether or not affected by the 1988 epidemic

	Affected by Diarrhoea	Not affected by Diarrhoea	Total
RC	289	1366	1655
JJ	484	2370	2854
Total	773	37336	4509

2.2 Age-Sex Structure

The age-sex structure (Table 2.2) of the population reveals relatively lower percentage (14%) under the age group of less than 5 years. Interestingly, there is an almost equal distribution between male and female population in the age group of 18 to 45 years which is supposed to be productive and within the working population group (See Table 2.2).

Table 2.2
Age-sex structure of the sample population

Age	Male	Female	Total
0-1	309 2.6%	234 2.4%	543 2.5%
1-3	499 4.2%	371 3.8%	870 4.01%
3-5	856 7.2%	859 8.8%	1715 7.92%
5-18	3838 32.3%	3124 32.0%	6962 32.16%
18-45	5217 43.9%	4315 44.2%	9532 44.04%
45 +	1057 8.9%	742 7.6%	1799 8.3%
NR	107 0.9%	117 1.2%	224 1.04%
Total	11883 54.9%	9762 45.1%	21645

2.3 Occupational Pattern

More than half the sample population consists of non-workers; with 64.2% of the females and 42.5% of the males falling in this category. thus the dependency ratio is quite high. Among those reporting to be working, the majority are engaged as casual labour, followed by those in service and small business, etc. (See Table 2.3).

Table 2.3
Occupational Pattern of the sample population

Occupation	Male	Female	Total
Casual labourers	2163 18.2%	1311 16.5%	3774 17.4%
Small business	998 8.4%	644 6.6%	1642 7.6%
Service	1687 14.2%	19 0.2%	1706 7.9%
Students	1925 16.2%	820 8.4%	2745 12.7%
Others (retired personnel/ domestic workers)	59 0.5%	400 4.1%	459 2.1%
Non-workers	5051 42.5%	6268 64.2%	11319 52.3%
Total	11883	9762	21645

2.4 Educational Level

The people are illiterate in both the Resettlement Colonies (52.1%) and the Jhuggi-Jhompris (66.6%). This is understandable considering the poor socio-economic conditions of the residents. In both cases illiteracy is higher among females than among men. (See Table 2.4). This is also understandable in the context of the socio-cultural characteristics of these settlements.

In the literate/educated component of the population, those having studied upto primary level account for the same, in percentage terms (11.8%), in both resettlement and Jhuggi-Jhompris areas, higher educational levels are relatively more frequently noted in resettlement colonies. This is attributable to the fact that in JJ colonies, socio-economic conditions are poorer and the spread of education beyond primary level has been slower compared to those in resettlement colonies.

2.5 Housing Conditions

As expected, better housing conditions were observed in resettlement areas than in Jhuggi-Jhompris areas. A majority of houses in the former were made from bricks, cement and RCC and in the latter from earthen soil and "chappar". (See Table 2.5). Likewise, seepage was reported by a much lower percentage of households in the former. Water accumulation on floors, however, was reported by a majority of respondents in both cases.

Table 2.4
Educational level of the sample population

Level of Education	Number of Persons								
	RC			JJ			Total		
	M	F	T	M	F	T	M	F	T
Illiterate	1745 41.1%	2226 65.5%	3971 52.1%	4325 56.4%	5014 78.8%	9339 66.6%	6070 51.1%	7240 74.2%	13310 61.5%
Primary level (upto Class 4)	531 12.6%	367 10.8%	898 11.8%	1127 14.7%	528 8.3%	1655 11.8%	1658 13.9%	895 9.2%	2553 11.8%
Middle level (5th to 9th Class)	944 22.4%	483 14.2%	1427 18.7%	1442 18.8%	681 10.7%	2123 15.1%	2386 20.1%	1164 11.9%	3550 16.4%
Upto high level (Class 10th)	522 12.4%	211 6.2%	733 9.6%	652 8.5%	19 0.3%	671 4.8%	1174 9.9%	230 2.4%	1404 6.5%
Undergraduate	228 5.4%	37 1.1%	265 3.5%	54 0.7%	6 0.1%	60 0.4%	282 2.4%	43 0.4%	325 1.5%
Technical training (ITI, Training in TV/ Radio repair, electrical works etc.)	160 3.8%	- -	160 2.1%	31 0.4%	- -	31 0.2%	191 1.6%	- -	191 0.9%
Graduate & above	21 0.5%	- -	21 0.3%	7 0.1%	- -	7 0.1%	28 0.2%	- -	28 0.1%
N.A.	63 1.5%	75 2.2%	138 1.8%	31 0.4%	115 1.8%	146 1.0%	94 0.8%	190 1.9%	284 1.3%
Total	4214	3399	7613	7669	6363	14062	11883	9762	21645

Table 2.5
Housing status of sample households

	Wall Material				Roof Material					
	Earthen Soil	Bricks	Bricks & Cement	Total	RCC	Tiles	Chhappar	Earthen Soil	Tin	Total
RC	162 9.8%	242 14.6%	1251 75.6%	1655	819 49.5%	270 16.3%	296 17.9%	189 11.4%	81 4.9%	1655
JJ	1887 66.1%	268 9.4%	699 24.5%	2854	459 16.1%	268 9.4%	1650 57.8%	120 4.2%	357 12.5%	2854
Total	2049 45.4%	510 11.3%	1950 43.3%	4509	1278 28.3%	538 11.9%	1946 43.2%	309 6.9%	438 9.7%	4509
	Floor Material				Seepage in walls			Accumulation of water on floor		
	Bricks & Cement	Bricks	Earthen Soil	Total	Yes	No	Total	Yes	No	Total
RC	349 21.1%	834 50.4%	472 28.5%	1655	409 24.7%	1246 75.3%	1655	1602 96.8%	53 3.2%	1655
JJ	371 13.0%	445 15.6%	2038 71.6%	2854	2021 70.8%	833 29.2%	2854	2542 89.1%	312 10.9%	2854
Total	720 16.0%	1279 28.3%	2510 55.7%	4509	2430 53.9%	2079 46.1%	4509	4144 91.9%	365 8.1%	4509

2.6 Income characteristics

The majority of households in both Resettlement Colonies (47%) and Jhuggi-Jhompri Colonies (74.5%) have family incomes of less than Rs. 1000/- p.m. However, the percentage of household having family incomes of more than Rs. 1000/- p.m. is, as expected, higher in the former. (See Table 2.6).

It is interesting to note that diarrhoea does not appear to have affected exclusively, or even predominantly, households in lower income groups (See Table 2.6).

Table 2.6
Household Incomes of sample households affected and not affected by Diarrhoea in the 1988 epidemic

		Monthly Family Income (Rs.)					
		Upto 500	500-1000	1000-1500	1500-2000	2000+	Total
RC	Affected by diarrhoea	19 6.6%	101 34.9%	107 37.0%	50 17.3%	12 4.2%	289
	Not affected by diarrhoea	164 12.0%	495 36.2%	314 23.0%	205 15.0%	188 13.8%	1366
	Total	183 11.1%	596 36.0%	421 25.4%	255 15.4%	200 12.1%	1655
JJ	Affected by diarrhoea	118 24.4%	205 42.4%	83 17.1%	35 7.2%	43 8.9%	484
	Not affected by diarrhoea	446 18.8%	1356 57.2%	306 12.9%	187 7.9%	45 3.2%	2370
	Total	564 19.8%	1561 54.7%	389 13.6%	222 7.8%	118 4.1%	2854
TOTAL	Affected by diarrhoea	143 18.5%	317 41.0%	174 22.5%	85 11.0%	54 7.0%	773
	Not affected by diarrhoea	598 16.0%	1827 48.9%	628 16.8%	411 11.0%	272 7.3%	3736
	Total	741 16.4%	2144 47.5%	802 17.8%	496 11.0%	326 7.2%	4509

CHAPTER III

ACCESS TO HEALTH RELATED FACILITIES

3.1 Water Supply

All the responding households had access to atleast one of three main sources of water, viz, taps, hand pumps and wells (See Table 3.1)

Table 3.1
Sources of Water Supply

		Tap	Handpump	Well	Others
RC	Affected by diarrhoea	180 49.5%	178 48.9%	2 0.5%	4 1.1%
	Not affected	1058 66.2%	517 32.3%	10 0.6%	12 0.8%
JJ	Affected by diarrhoea	344 62.3%	204 37.0%	-	4 0.7%
	Not affected	1580 55.0%	1224 42.6%	8 0.3%	62 2.1%
		RC	JJ	RC	JJ
No. of responses		364	552	1597	2874
No. of HH		289	484	1366	2370
No. of HH having more than one source of drink in water		75 25.6%	68 14.1%	231 16.9%	322 13.6%

In general resettlement colonies appear to be better served with regard to the availability of municipal water supply (in terms of both availability of MCD pipelines and their distance from the household) compared to Jhuggi-Jhompri settlements. Only 15.2% of the households in the former reported non-existence of MCD pipelines, whereas the comparable figure in the latter was 53.7%. It was also observed that in resettlement colonies the percentage of households that did not have access to municipal water supply was higher amongst the ones

affected by the epidemic. In the-Jhuggi Jhompri settlements there was no significant pattern in this regard (See Table 3.2).

Table 3.2
MCD Water Pipeline (Availability and distance from residence)

Type of Dwellings		Distance of MCD water pipeline from household (residence)				Total
		50 meter	50-1/2 k.m.	1/2 k.m.	No. MCD Line	
RC	Affected by diarrhoea	152 52.5%	55 19.3%	24 8.2%	58 20.0%	289
	Not affected	744 54.5%	313 22.9%	115 8.4%	194 14.2%	1366
	Total	896 54.1%	368 22.2%	139 8.4%	252 15.2%	1655
JJ	Affected by diarrhoea	127 26.2%	83 17.2%	21 4.2%	253 52.4%	484
	Not affected	588 24.8%	419 17.7%	83 3.5%	83 54.0%	1280
	Total	715 25.1%	502 17.6%	104 3.6%	1533 53.7%	2854
TOTAL	Affected by diarrhoea	279 36.1%	138 17.9%	45 5.8%	311 40.2%	773
	Not affected	1332 35.6%	732 19.6%	198 5.3%	1474 39.5%	3736
	Total	1611 35.7%	870 19.3%	243 5.4%	1785 39.6%	4509

While 100% of the responding households had access to water supply, as many as 55.6% of them considered the available supply insufficient (See Table 3.3). The insufficiency of water supply was reported more often in Jhuggi-Jhompri areas than in resettlement colonies and by households affected by diarrhoea than ones not affected.

Table 3.3
Sufficiency of Water Supply

Type of Dwellings		Sufficient	Insufficient	Total
RC	Affected by diarrhoea	119 41.2%	170 58.8%	289
	Not affected	772 56.5%	594 43.5%	1366
	Total	891 53.8%	764 46.2%	1655
JJ	Affected by diarrhoea	130 26.9%	354 73.1%	484
	Not affected	979 41.3%	1391 58.7%	2370
	Total	1109 38.9%	1745 61.1%	2854
TOTAL	Affected by diarrhoea	249 32.2%	524 67.8%	773
	Not affected	1751 46.9%	1985 53.1%	3736
	Total	2000 44.6%	2509 55.6%	4509

3.2 Garbage disposal

About half of the responding households reported dumping garbage outside their houses, 19.1% reported use of the municipal dump, 15.8% reported dumping in drains, and 15% reported throwing garbage just anywhere (See Table 3.4). More or less similar patterns can be seen in both resettlement and Jhuggi-Jhompri areas and also between households affected or not affected by diarrhoea.

Table 3.4
Places of Garbage Disposal

Type of Dwellings		Outside house	Drain	Municipal Dump	Anywhere	Total
RC	Affected by diarrhoea	134 46.4%	44 15.2%	458 20.1%	53 18.3%	289
	Not affected	598 43.8%	361 26.4%	306 22.4%	101 9.3%	1366
	Total	732 44.2%	405 24.5%	364 21.9%	154 9.3%	1655
JJ	Affected by diarrhoea	253 52.3%	60 12.4%	80 16.5%	91 18.8%	484
	Not affected	1273 53.7%	246 10.4%	417 17.6%	434 18.3%	2370
	Total	1526 53.5%	306 10.7%	497 17.4%	525 18.4%	2854
TOTAL	Affected by diarrhoea	387 50.0%	104 13.5%	138 17.9%	144 18.6%	773
	Not affected	1871 50.1%	607 16.2%	723 19.4%	535 14.3%	3736
	Total	2258 50.1%	711 15.8%	861 19.1%	679 15.0%	4509

The MCD has made provisions for trucks for clearing garbage at regular intervals where facilities for its disposal are not available. Information collected on the regularity of these trucks indicates that their performance is somewhat better in the resettlement colonies (See Table 3.5). Surprisingly, however, the percentage of households reporting such performance was somewhat higher amongst households affected by the epidemic than amongst those not affected.

Table 3.5
Regularly of Municipal Truck service for garbage clearance

Type of Dwellings		Regularity of Municipal Truck Service		
		Regular	Irregular	Total
RC	Affected by diarrhoea	170 58.8%	119 41.2%	289
	Not affected	764 55.9%	602 44.1%	1366
	Total	934 56.4%	721 43.6%	1655
JJ	Affected by diarrhoea	157 32.4%	327 67.6%	484
	Not affected	858 36.2%	1512 63.8%	2370
	Total	015 35.6%	1839 64.4%	2854
TOTAL	Affected by diarrhoea	327 42.3%	446 57.7%	773
	Not affected	1622 43.6%	2114 56.6%	3736
	Total	1949 43.2%	2560 56.8%	4509

3.3 Toilet Facilities

The majority of responding households in both resettlement and Jhuggi-Jhompri colonies use either public lavatories or open spaces or drains or just any other places. Access to private toilets was restricted to less than a third of the responding households from resettlement colonies and to less than a twentieth of the ones from Jhuggi-Jhompri settlements. The incidence of diarrhoea during the 1988 epidemic does not appear to be significantly related to the access or otherwise of households to private toilet facilities (See Table 3.6).

Table 3.6
Availability of Toilet facilities

Type of Dwellings		Toilet facilities					Total
		Private Toilets	Public Toilets	Open Space	Drains	Any where	
RC	Affected	58 20.1%	129 44.6%	79 27.3%	23 8.0%	-	289
	Not affected	462 3.8%	646 47.3%	238 17.4%	20 1.5%	-	1366
	Total	520 31.4%	775 46.8%	317 19.2%	43 2.6%	-	1655
JJ	Affected	11 2.3%	162 33.5%	226 46.7%	36 7.4%	49 10.1%	484
	Not affected	109	917 4.6%	1088 38.7%	194 45.9%	62 8.2%	2370 2.6%
	Total	120 4.2%	1079 37.8%	1314 46.0%	230 8.1%	111 3.9%	2854
TOTAL	Affected	69 8.9%	291 37.6%	305 39.5%	59 7.6%	49 6.3%	773
	Not affected	571 15.3%	1563 41.8%	1326 35.5%	214 5.7%	62 10.7%	3736
	Total	640 14.2%	1854 41.1%	1631 36.2%	273 6.1%	111 2.9%	4509

3.4 Health and Family Planning Services

Ironically the majority (67.5% and 57.6% in, respectively, resettlement and Jhuggi-Jhompri areas) of the households affected by diarrhoeal outbreak in 1988 reported having sought treatment from private doctors rather than from Government hospitals or primary health centres. Further, the majority of these households reported that the treatment was expensive (See Table 3.7).

Regarding family planning advice and services also, the performance of health centres has been poor. Only 41.2% of the households from Resettlement Colonies and 24.5% from Jhuggi-Jhompri settlements reported having received advice/information on family planning from the MCH Centre, and the majority (62.6% and 72% in, respectively, resettlement and Jhuggi-Jhompri Colonies) reported not having received any family planning services (See Table 3.8).

Table 3.7
Place and Cost of treatment for diarrhoea

Type of dwellings	Place of Treatment						Opinion about cost of Treatment		
	Home	Govt. Hosp.	Private Doctor	Primary Health Centre	No treatment	Total	Expen.	Reas.	Total
RC	12 4.2%	57 19.7%	195 67.5%	25 8.6%		289	176 60.9%	113 39.1%	289
JJ	15 3.1%	91 18.8%	279 57.6%	75 15.5%	24 5.0%	484	327 67.5%	157 32.5%	484
Total	27 3.5%	148 19.1%	474 61.3%	100 12.9%	24 3.1%	773	503 65.1%	270 34.9%	773

Table 3.8
Family Planning Information/Advise and Services received from the MCH Centre

Type of Household	Information/Advise received				Sources received					
	Yes	No	No response	Total	OP	Copper-T	Condom	Any other (V/T)	No Service received	Total
RC	682 41.2%	414 25.0%	559 33.8%	1655	149 9.0%	149 9.0%	246 14.9%	75 4.5%	1036 62.6%	1655
JJ	699 24.5%	782 27.4%	1373 48.1%	2859	371 13.0%	134 4.7%	240 8.4%	54 1.9%	2055 72.0%	2854
Total	1381 30.6%	1196 26.5%	1932 43%	4509	520 11.5%	283 6.3%	486 10.8%	129 2.9%	3091 69%	4509

CHAPTER IV

ASSESSMENT OF HEALTH KNOWLEDGE AND PRACTICES

4.1 Introduction

In the previous Chapter, an attempt was made to determine the factors or combination of factors in respect of health and related services available that could have been responsible for the epidemic by distinguishing in the sample components affected and not affected by the epidemic. It may be pertinent to note that after the epidemic the status of water supply, frequency of garbage clearance, the availability of health services, etc. were given greater attention in a large number of the sample locations. The responses recorded in the survey were made in the context of these additional inputs which did not exist prior to the epidemic. As such the emergent picture is somewhat distorted.

In this Chapter, relational patterns are examined with respect to a fact less likely to have significantly changed, viz, health knowledge and practices of households. Before proceeding to look at specific aspects in this regard the sources of health information as reported by respondents may be identified (See Table 4.1). On the whole, the main sources of health education, as expected, have been the electronic media, i.e. TV and radio, reported as such by the majority of households from both Resettlement and Jhuggi-Jhompri colonies, and households affected and not affected by diarrhoea.

Table 4.1
Sources of Health Information

Type of Dwellings		Sources of Health Information					
		Public Health Services	Voluntary Organizations	School	Radio	T.V.	News Magazine
RC	Affected by diarrhoea	63 10.5%	63 10.5%	65 10.8%	138 23.0%	112 18.6%	12 2.0%
	Not affected by diarrhoea	256 8.2%	256 8.2%	281 9.0%	756 24.2%	748 23.9%	159 5.1%
JJ	Affected by diarrhoea	50 8.2%	58 9.52%	42 7.4%	279 45.8%	82 13.47%	5 .83%
	Not affected by diarrhoea	385 10.17%	272 7.19%	295 7.79%	987 26.07%	890 23.51%	354 9.35%

Jhompri and resettlement colonies) also reported doing so near sources of water supply (See Table 4.6).

Table 4.6
Place of washing clothes and utensils

Type of Dwellings	Place of washing clothes and utensils				Total
	Within house	Infront of house	Near source of water supply	NR	
RC	745 45.0%	379 22.9%	531 32.1%	-	1655
JJ	522 18.3%	1261 44.2%	714 25.0%	357 12.5%	2854
Total	1267 28.1%	1640 36.4%	1245 27.6%	357 7.9%	4509

4.4 Knowledge about preventive measures for common diseases

A majority of the respondent households were not aware of preventive measures for common diseases like diarrhoea, typhoid, jaundice, malaria, polio and T.B. This was the case in both resettlement and Jhuggi-Jhompri colonies and amongst both households affected and not affected by the 1988 epidemic (See Table 4.7).

4.5 Breast feeding and Weaning food practices

Data on breast feeding practices could be collected from 1320 mothers in resettlement colonies and 2275 mothers in Jhuggi-Jhompri areas. The largest percentage reported breast feeding/having breast-fed their child upto 1-2 years of age and a significant percentage doing/having done so even when the child is/was 2 or more years old (See Table 4.8).

Considerable variations were found in the age group of the child at the time weaning food was introduced, as reported by mothers. (See Table 4.9).

4.6 Knowledge and Practice in respect of Family Planning Methods

In the previous Chapter, it was mentioned that a large percentage of respondent households had not received any family planning advice and an even larger percentage any family planning services from the Municipal Health Centre. This is reflected in family planning practices not being commonly practiced. On the whole less than a third of the respondents reported using contraceptives. Oral contraception seemed most commonly used in Jhuggi-Jhompri areas while Copper-T and Condoms were more commonly used by respondents in resettlement colonies (See Table 4.10).

Table 4.7
Knowledge about preventive measures for common diseases

Type of Dwellings		Cholera			Typhoid			Jaundice		
		Yes	No	T	Yes	No	T	Yes	No	T
RC	Affected by diarrhoea	110	179	289	28	261	289	45	244	289
	Not affected by diarrhoea	312	1054	1366	250	1116	1366	250	116	1366
	Total	422	1233	1655	278	1377	1655	295	1360	1655
JJ	Affected by diarrhoea	112	372	484	48	436	484	38	446	484
	Not affected by diarrhoea	552	1818	2370	118	2252	2370	227	2143	2370
	Total	664	2190	2854	166	2688	2854	265	2589	2854
TOTAL	Affected by diarrhoea	222	551	773	76	697	773	83	690	773
	Not affected	864	2872	3736	368	3368	3736	447	3259	3736
	Total	1086	3423	4509	444	4065	4509	560	3949	4509

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4.2 Knowledge and Practice related to water purification

About a fourth of the respondent households in resettlement colonies and nearly half in Jhuggi Jhompri areas considered the available water unsafe for drinking purposes (See Table 4.2)

Table 4.2
Opinion about quality of water (safe/unsafe) available

Type of Dwellings	Safe	Unsafe	Total
RC	1205 72.8%	450 27.2%	1655
JJ	1481 51.9%	1373 48.1%	2854
Total	2686 59.6%	1823 40.4%	509

However, even as a majority of the households in the resettlement colonies were aware of water purification methods, a majority in the Jhuggi-Jhompri settlements were not (See Table 4.3). Furthermore, even within the third or so of the Jhuggi-Jhompri households who were aware of such methods, a relatively high percentage did not use any (See Table 4.4).

Table 4.3
Knowledge about method(s) purification of water

Type of Dwellings	Yes	No	Total
RC	1062 64.2%	593 35.8%	1655
JJ	902 31.6%	1952 68.4%	2854
Total	1964 43.6%	2545 56.4%	4509

Of the various methods of purifying water boiling is most followed by straining. Use of chlorine tablets and camphor tablets for purification was reported by very few households (See Table 4.4).

Table 4.4
Methods of purification of water practiced

Type of dwellings	Households reporting knowledge of purification of water	Methods of purification practiced				
		Straining	Boiling	Chlorine Tablets	Using Camp-hor chemicals	None
RC	1062	376 35.4%	589 55.5%	67 6.3%	10 0.9%	20 1.9%
JJ	902	182 20.2%	547 60.6%	18 2.0%	12 1.3%	143 15.9%
Total	1964	558 28.4%	1136 57.8%	85 4.3%	22 1.1%	163 8.3%

4.3 Practices relating to liquid waste disposal washing clothes and cleaning utensils

In the previous chapter it was mentioned that about half the responding households dump garbage outside their houses. In Jhuggi-Jhompri colonies a similar situation is observed in respect of liquid wastes. In the resettlement colonies a large proportion of households dispose liquid wastes into the drains (See Table 4.5).

Table 4.5
Places of liquid waste disposal

Type of Dwellings	Place of liquid waste disposal of household			
	In drainage	Outside house with other waste	NR	Total
RC	1374 83.0%	281 17.0%	-	1655
JJ	1319 46.2%	1484 52.0%	51 1.8%	2854
Total	2693 59.6%	1765 39.1%	51 1.3%	4509

Again while the majority (45%) of households in resettlement colonies reported washing clothes and utensils within the house, a majority (49.2%) in Jhuggi-Jhompri settlements reported doing so in front of the house. A good number (25% and 32% in respectively, Jhuggi-

Table 4.7 Contd.

Type of Dwellings		Malaria			Polio			T.B.		
		Yes	No	T	Yes	No	T	Yes	No	T
RC	Affected by diarrhoea	52	237	289	52	237	289	52	237	289
	Not affected	341	1025	1366	341	1025	1366	341	1025	1366
	Total	393	1262	1655	393	1262	1655	393	1262	1655
JJ	Affected by diarrhoea	57	427	484	57	427	484	50	434	484
	Not affected	227	2143	2370	227	2143	2370	212	2158	2370
	Total	284	2570	2854	284	2570	2854	262	2592	2854
TOTAL	Affected by diarrhoea	109	664	773	109	664	773	102	671	773
	Not affected	568	3168	3736	568	3168	3736	553	3183	3736
	Total	677	3832	4509	677	3832	4509	655	3854	4509

**Table 4.8
Breast Feeding Practices**

Type of Dwellings	Period of Breast Feeding					Total (Household mothers)
	Less than 6 months	6 months to 1 year	1-2 yrs.	More than 2 years	NR	
RC	74 5.6%	473 35.8%	245 18.6%	264 20.0%	264 20.0%	1320
JJ	198 8.7%	298 13.1%	691 30.4%	319 10.0%	769 33.8%	2275
Total	272 7.6%	771 21.4%	936 26.0%	583 16.2%	1033 28.7%	3595

**Table 4.9
Weaning Food Practices**

Type of households	Age of child given weaning food					Total (HH mothers)
	After 4 months	After 6 months	After 1 year	After 2 years	NR	
RC	133 10.0%	294 22.3%	322 22.4%	175 13.3%	396 10.0%	1320
JJ	303 13.3%	789 34.7%	394 17.3%	182 8.0%	607 26.7%	2275
Total	436 12.1%	1083 30.1%	716 19.9%	357 9.9%	1003 27.9%	3595

Table 4.10
Family Planning and Practices

Type of Dwellings	Information/Advise received		Adoption of FP methods					Total HH reporting
	Yes	Total HH reporting	OP	Copper-T	Condom	Any other	No method adopted	
RC	682 41.2%	1655	149 9.0%	149 19.0%	246 14.9%	75 4.5%	1036 62.6%	1655
JJ	699 24.5%	2859	371 13.0%	134 47.7%	240 8.4%	54 1.9%	2055 72.0%	2854
Total	1381 30.6%	4509	520 11.5%	283 6.3%	486 10.8%	129 2.9%	3091 69.0%	4509

4.7 Facilities/Services availed at the MCH Centres

Among the various facilities/services such as ante-natal care, natal services, post-natal care, immunization and family planning services, offered at the municipal health centres the most availed service, as reported by respondents, is immunization. While each household in resettlement colonies reported having availed more than one facility at the MCH Centres many households in the Jhuggi-Jhompri areas seem not to have availed even one of the facilities offered (See Table 4.11). Whether this is due to the lack of such facilities at MCH Centres located near JJ areas or to something else needs to be probed.

Table 4.11
Facilities availed at the MCH Centre

Type of Dwellings	Facilities availed at MCH Centres					Total No. of reporting households
	Ante-natal care	Natal care	Post-natal care	Immuni- zation	F.P. services	
RC	422 25.5%	308 18.6%	36 21.8%	943 57.0%	624 37.8%	1655
JJ	251 8.8%	348 12.2%	231 8.1%	942 33.0%	548 19.2%	2854
Total	673 14.9%	656 14.5%	267 5.9%	1885 41.8%	1172 26.0%	4509

CHAPTER V

SUMMARY OBSERVATIONS

5.1 Introduction

In this Chapter are presented some salient observations in respect of those components of our study that have direct and significant influence on health, such as water management, environmental sanitation, knowledge of disease prevention measures, facilities availed at MCH Centres, family planning and child nutrition etc.

5.2 Socio-economic characteristics

5.2.1 Not surprisingly a majority of the sample population was found to be illiterate. In the literate component, while the percentages of those having studied upto primary level was found to be the same in Jhuggi-Jhompri and resettlement colonies, the percentage of respondents reporting education above primary level was much lower in the former. This is presumably because Jhuggi-Jhompri clusters are inhabited by population falling in relatively lower socio-economic strata and, as such, the spread of education beyond primary level has been slow. On the whole, the low levels of literacy and education and the poor health awareness attendant to them is, very likely, a major cause of the poor sanitation conditions which precipitated the 1988 epidemic in many of these settlements.

5.2.2 The majority of households have family incomes of less than Rs. 1000/- per month. Such percentage in Jhuggi-Jhompri settlements (74.5%) far exceeds the same (47%) in resettlement colonies. Interestingly, the outbreak of cholera does not appear to have occurred exclusively, or even predominantly, in households having low income profiles.

5.3 Access to health-related facilities

5.3.1 All households have access to atleast one source of water supply from amongst taps handpumps and wells. The percentages of respondents reporting availability or nearness of municipal water mains were higher in resettlement than in Jhuggi-Jhompri colonies. Although the majority of households reported using tap water, the percentage of those using water from hand pumps was significant. In the context of waste disposal practices which render ground water contamination a likely possibility, this is likely to have been one of the causal factors for the outbreak of cholera.

5.3.2 Access to private toilets was reported only by about a third of the households in resettlement colonies and was found to be quite rare in Jhuggi-Jhompri settlements. In the former public toilets were most commonly used, where as in the latter, defecation in open spaces was the most commonly reported toilet practice. This, ofcourse, has grave implications for the environment and health conditions in the settlement.

5.3.3 Regular garbage clearance by municipal trucks was more frequently reported in Resettlement than in Jhuggi-Jhompri colonies. It is pertinent, however, to note here that since such facilities have received greater attention from the administration after the epidemic, the responses obtained in the survey may reflect a picture somewhat better than was prevailing before the epidemic. As such patterns relating to access to health related facilities are not very accurate.

5.4 Health knowledge and practices

5.4.1 About a fourth of the respondents in Resettlement Colonies and half in Jhuggi-Jhompri settlements considered available water supply unsafe for drinking. However, only two thirds in the former and a mere third in the latter were aware of water purification methods. Furthermore, even amongst those reporting such knowledge, some did not practice any of such methods. Of the rest, the majority (about 60%) reported boiling as the method practiced for water purification, followed by straining. Use of chlorine tablets for purification was reported by very few.

5.4.2 Less than a fifth of the households reported dumping garbage in the municipal dump. Almost half of them disposed garbage outside their house. Among the rest almost equal percentages do so either in the drain or just anywhere. These practices make for a general condition of filth and squalor .

5.4.3 In Resettlement colonies a majority (45%) of households reported washing clothes and utensils within their house, whereas in Jhuggi-Jhompri settlements the majority (44%) reported doing so in front of their houses. A sizeable percentage in both cases also reported washing clothes and utensils near the handpumps, quite unaware of the contamination hazards.

5.4.4 The majority of households do not have knowledge about preventive measures for common diseases like malaria, polio, TB, cholera, typhoid and jaundice.

5.4.5 The practice of breast-feeding children even upto the age of 2 years and more is common. This obviously affects weaning food practices.

5.4.6 Of the services offered at the municipal health centres, the most commonly availed one appears to be immunization. On the other hand a majority of households reported not having received any family planning advice/services from the MCH Centres. This is reflected in the low adoption of family planning methods and whether it is due to lack of awareness or to indifference or to lack of ready availability of such services from MCH Centres needs further investigation. Another aspect that merits investigation is the fact that whereas every households in resettlement colonies reported having availed more than one facility at the municipal health centre, many in Jhuggi-Jhompri settlements had not availed even one. Whether this is because of lack of adequate facilities at MCH Centres located near such areas or of something else needs to be probed.

5.5 Concluding observations

Two patterns consistently recur in the analysis of health related data in the Resettlement and Jhuggi-Jhompri colonies affected and not affected by the 1988 epidemic. First, as expected, Resettlement colonies are better placed than Jhuggi-Jhompri settlements with regard to amenities/facilities, enjoying a better socio-economic status, so to speak. As a consequence, perhaps, they also appear to be better placed in respect of health awareness. Second, the Study does not reveal much variation in health knowledge and practices between households affected and not affected by cholera in both Resettlement and Jhuggi-Jhompri areas.

Name of the organization

Locality Code

Address

Name of the Interviewer

I. General Information

1. Name of the Locality

2. Type of Locality
- | | |
|----------------------------------|--------------------------|
| (1) Resettlement Colony | <input type="checkbox"/> |
| (2) Slum Settlement | <input type="checkbox"/> |
| (3) Unauthorised Slum Settlement | <input type="checkbox"/> |

3. Name of the head of the household

4. (1) Block No.

(2) House No.

5. No. of members in the household

(1) No. of males

(2) No. of females

(3) Total No.

6. Household data

S. No.	Name	Age	Sex	Relationship with head of household	Educational qualification	Occupation	No. of days employed in an average year	Average monthly income (Rs.)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

Total

7. State of origin

8. District of origin

9. How long (no. of years/months) have you been :

1. in Delhi

2. in this Colony

II. WATER

10. Source of drinking water

(1) Tap

- (2) Hand Pump
- (3) Well
- (4) Any other
11. Distance of the source from the house (Distance in kilometer)
12. Is there a MCD pipe line near the house ?
- (1) Yes
- (2) No
13. If yes, how far is it?
- (1) Less than 50 meters
- (2) Between 50 - 100 meters
- (3) 100m - 1/2 kilometer
- (4) More than 1/2 kilometer
14. When does the water come in this tap?
- (1) 1 a.m. - 4 p.m.
- (2) 5 - 8 a.m.
- (3) 9 - 12 noon
- (4) 1 - 4 p.m.
- (5) 5 - 8 p.m.
- (6) 9 - 12 midnight
15. How long does the water come?
- (1) Whole day
- (2) 1 - 2 hours
- (3) 3 - 6 hours

16. Is the water supply sufficient?

(1) Yes

(2) No

17. How much time do you spend to fetch water?

(1) Less than 1/2 hours

(2) Less than 2 hours

(3) More than 2 hours

18. How do you store drinking water?

(1) In pots

(2) In utensils

(3) In buckets

(4) Any other

19. For how long is the drinking water stored?

(1) 12 hours

(2) 24 hours

(3) More than 24 hours

20. How many times do you fetch water in a day?

(1) Once

(2) 2 times

(3) More than 2 times

21. Which water do you use for bathing and washing clothes?

(1) Tap

(2) Hand Pump

(3) Well

(4) Any other

III. WATER PURIFICATION

22. Before the outbreak of cholera, do you consider the water safe?

(1) Yes

(2) No

23. Are you aware of the methods of water purification?

(1) Yes

(2) No

24. Did you purify water?

(1) Before the epidemic

(2) After the epidemic

(3) Today

25. If yes, which method did you use?

(1) Straining

(2) Boiling

(3) chlorine tablets

(4) Other methods
(specify)

IV. FOOD HABITS

26. How many times do you cook in a day?

(1) Once

(2) 2 times

(3) 3 times

27. How many times do you eat in a day?

- (1) Once
- (2) 2 times
- (3) 3 times

28. Generally, what does the household diet comprise of?

- | | | | |
|----------------|----------------------|------------------------|----------------------|
| (1) Chapatti | <input type="text"/> | (7) Chutney | <input type="text"/> |
| (2) Rice | <input type="text"/> | (8) Spices | <input type="text"/> |
| (3) Dal | <input type="text"/> | (9) Chillies and Onion | <input type="text"/> |
| (4) Vegetables | <input type="text"/> | (10) Red Chilli Powder | <input type="text"/> |
| (5) Pickles | <input type="text"/> | (11) Curd/Butter Milk | <input type="text"/> |
| (6) Papad | <input type="text"/> | | |

29. Do the children below 6 drink milk?

- (1) Daily
- (2) Sometimes
- (3) Rarely
- (4) Never
- (5) N/A

30. How often does the family eat fruits?

- (1) Daily
- (2) Sometimes
- (3) Rarely
- (4) Never

31. Do you eat seasonal vegetables?

(1) Yes

(2) No

32. Do you wash the vegetables?

(1) Always

(2) Sometimes

(3) Rarely

(4) Never

(5) N/A

33. If so, when do you wash?

(1) Before cutting

(2) After cutting

34. If so, which water do you use?

(1) Tap

(2) Handpump

(3) Well

(4) Any other

V. LAVATORY FACILITIES

35. Where do your family members go for defecation?

(1) Private Lavatory

(2) Public Lavatory

(3) Open Ground

(4) Drains

(5) Any other place

36. Who cleans your lavatory?

(1) Sweeper

(2) We ourselves

(3) N/A

37. Where are the faeces disposed off?

(1) Municipal dump

(2) Inside the toilet using water

(3) In drains

(4) Nowhere

VI. MEDICAL FACILITIES

38. From the last month till today, has any of your family members suffered from Diarrhoea?

(1) Yes

(2) No

39. If yes, who and for how long?

S. No.	Name	Sex	Age	No. of days affected	Seriousness Mild/Medium/Serious/ Death
1.					
2.					
3.					
4.					
5.					

40. Where did you go for treatment?

- (1) At home
- (2) Hospital
- (3) Private Doctor
- (4) Primary Health Centre
- (5) Nowhere

41. How long (number of days) did the treatment last?

- (1) At home
- (2) At home and hospital
- (3) Hospital and home
- (4) Home, doctor and hospital

42. How long did it take you to reach the place of treatment?

- (1) Less than 1/2 hours
- (2) 1-3 hours
- (3) More than 3 hours
- (4) N/A

43. How did you reach the place of treatment?

- (1) By walk
- (2) Cycle
- (3) Scooter
- (4) Bus
- (5) Ambulance
- (6) N/A

44. What difficulties did you face to reach the place of treatment?

(1) Choice of the place

(2) Arranging for money

(3) Conveyance

(4) Helping hand/companion

45. What medicines were prescribed at the place of treatment?

(1) Home remedies

(2) O.R.S.

46. What was the expenditure on treatment?

(1) Rupees

47. Did you need to borrow money for treatment?

(1) Yes

(2) No

48. According to you, how was the treatment?

(1) Expensive

(2) Reasonable

VII. GARBAGE DISPOSAL

49. Where do you throw the household wastes/dirt etc.?

(1) Outside the house

(2) In the drain

(3) In the Municipal dump

(4) Somewhere else (specify)

50. Does the Municipality truck come regularly?

(1) Yes

(2) No

51. Who comes to sweep your area?

(1) Corporation sweeper

(2) Nobody

52. How often does this person come?

(1) Everyday

(2) Every third day

(3) Once a week

(4) Not at all

(5) N/A

VIII. DISPOSAL OF HOUSEHOLD WASTE WATER FROM COOKING, WASHING AND BATHING

53. Where do you wash your clothes and utensils?

(1) Private bathroom

(2) Outside the house

(3) Near the water source

54. Where does the water flow after the washing?

(1) Into the drains

(2) Collects outside the house/near water source

(3) Any other place

55. Where do you dispose off the household liquid wastes?

- (1) Into the drains
- (2) Along with the garbage
- (3) Outside the house

56. Where do you take your bath?

- (1) Private bathroom
- (2) Private enclosure
- (3) Public baths
- (4) Outside the house
- (5) Near the water source
- (6) Any other (specify)

57. Where does the water go after bathing?

- (1) Into the drains
- (2) Remains stagnant outside
- (3) Any other place

IX. FUEL

58. On what do you cook your food?

- (1) Ordinary chulha
- (2) Smokeless stove
- (3) Kerosene stove
- (4) Gas
- (5) Any other (specify)

59. What type of fuel do you use?

- (1) Cow dung cake
- (2) Fuel ball
- (3) Wood
- (4) Charcoal
- (5) Coke
- (6) Kerosene
- (7) Gas
- (8) Any other (specify)

60. Do you inhale smoke/vapours/fumes while cooking?

- (1) Yes
- (2) No
- (3) N/A

61. How much do you think you inhale?

- (1) A lot
- (2) Not very much
- (3) Very little
- (4) Nothing
- (5) N/A

62. What is the outlet for the smoke/fumes/vapours to go out?

- (1) Opening in the roof
- (2) Chimneys
- (3) Ventilators

(4) Nothing

(5) N/A

X. STRUCTURE OF WALLS, FLOOR AND THE ROOF OF THE HOUSE

63. What materials is used to make the wall?

(1) Mud

(2) Straw Mats

(3) Bricks

(4) Bricks and Cement

(5) Any other (specify)

64. Are there any leaks/seepages in the walls?

(1) Yes

(2) No

65. If yes, what is a the extent of seepage/leaks

(1) Very high

(2) Not so much

(3) Little bit

66. What is the material of the roof?

(1) Tin

(2) Thatched Straw

(3) Tiles

(4) Mud

(5) RCC Roof

(6) Any other (specify)

67. Are there leaks/seepages during the rainy season on the roof?

(1) Yes

(2) No

68. If yes, what is the extent of seepages/leaks?

(1) Very high

(2) Not so high

(3) Little bit

69. What material is used for flooring?

(1) Mud

(2) Brick

(3) Brick & Cement

(4) Any other (specify)

70. Is there water retention?

(1) All round the year

(2) During the rainy reason

71. What is the extent of water retention?

(1) Very high

(2) Not so high

(3) Little bit

XI. GENERAL AWARENESS

72. Are you aware of the steps to prevent cholera?

(1) Yes

(2) No

73. Are you aware of the preventive measures of other prevalent diseases?

Typhoid : (1) Yes

(2) No

Jaundice : (1) Yes

(2) No

Malaria : (1) Yes

(2) No

Poliomyelitis : (1) Yes

(2) No

74. If yes, specify for each.

75. Is anybody suffering from T.B. in your house?

(1) Yes

(2) No

76. If yes, how many people are suffering?

(1) 1

(2) 2

(3) More than 2

77. Who are the cases of T.B. in your house?

(1) Adults (above 18 years)

(2) Children below 10 years

(3) Children above 10 years

(4) All of the above

78. Are you aware of other T.B. cases in your neighbourhood?

(1) Yes

(2) No

79. If yes, specify.

80. Are you aware of the curative aspects of T.B.?

(1) Yes

(2) No

81. If yes, specify

82. Are you aware that T.B. is completely curable?

(1) Yes

(2) No

83. What kind of facilities do you avail at the MCH Centre?

(1) Immunization

(2) F.P. methods

(3) Pre-natal care

(4) Post natal care

(5) Facilities during delivery

84. Are you satisfied with the immunization facilities at the MCH Centre?

(1) Yes

(2) No

85. If no, state the reasons.

86. Does the MCH Centre provide proper information on the FP methods?

(1) Yes

(2) No

87. Are you availing any kind of F.P. facilities from MCH Centre?

(1) Yes

(2) No

88. If yes, specify.

(1) Natural methods

(2) Pils

(3) Copper-T

(4) Nirodh

(5) Cream

(6) Vasectomy

(7) Tubectomy

(8) N/A

89. Do you breast feed your child?

(1) Yes

(2) No

90. If yes, for how long?

(1) 6 months

(2) 6 months - 1 year

(3) 1 - 1 $\frac{1}{2}$ year

(4) 1 $\frac{1}{2}$ - 2 years

(5) More than 2 years

91. From when do you start giving solid foods to your child?

(1) After 4 months

(2) After 6 months

(3) After 1 year

(4) After 2 years

92. Does the MCH Centre cater to the referrals from the Anganwadis?

(1) Yes

(2) No

93. What is your source of information on health?

(1) Voluntary Organisations

(2) Public Health Services (specify)

(3) School

(4) Radio/TV

(5) Friends

(6) Any other

(7) Newspaper/Magazine

(8) Cinema

(9) None

94. According to you, who is the most influential person in your area?

(1) Pradhan

(2) Corporator

(3) Any other

AREAS SELECTED FOR THE HEALTH ASSESSMENT STUDY

RESETTLEMENT COLONIES

EAST ZONE	WEST ZONE	NORTH ZONE	SOUTH ZONE	CENTRAL ZONE
Kondli	Chaukhandi	Jahangirpuri	Dakshinpuri	
Nand Nagari-II	Mangolpuri	Shakurpur-III	Garhi Village	
Old Seemapuri	Mangolpuri-II	Shakurpur (Basti)	Motu Bagh	
Patparganj Complex	Mangolpuri-III	Wazirpur	Srinivaspuri	
Seelampuri (Addl)	Nangloi-III		Sunlight colony	
Trilokpuri	Nangloi-I			
	Najafgarh Rd. (Add.)			
	Pandu Nagar			
	Ranjit Nagar			
	Sultanpuri			

SLUM AND JJ SETTLEMENTS

EAST ZONE	WEST ZONE	NORTH ZONE	SOUTH ZONE	CENTRAL ZONE
Gokulpuri (Near Block C)	Bhauri Pyau Vikaspuri	Boulevard Rd. Petrol Pump	Alijam Nagar Safd. Airport	Backside Annanagar Near I.T.O.
Harijan Camp Trilokpuri	Chuna Bhati Kirti Nagar	Bunker Colony Sawaan Park Near Banuwal Nagar, Pitampura	Abdul Faisal Encl. (Okhla Village)	Barakhamba Road (Near FCI)
Indira Nagar Trilokpuri	Delhi Pradesh J.J. Sangh (Mayapuri)	Chanderashekhar Azad Colony	Near Aravali Apts. Alaknanda	Compernicus Marg JJ Colony
Jhilmil (Opp. Krishna Mkt.)	Faridpur Colony West Patel Nagar (Near G. Block Primary School)	Wazirpur Ind. Area	Dr. Ambedkar Camp	Hathi Park, Mata Sundri Road
Kalandar Colony (Dilshad Garden)		(At) Gujranwala Town Kaushalpur	Balmiki Seva Sanghra (Near Safd. Hospital)	
New Seemapuri Blocks A & D	Ghanta Ghar Samta Dham (Harinagar)	Jehangirpuri Block-H	Buddha Camp Panchsheel Park	
New Seemapur (Near F & A Block)	Indira Gandhi Camp (Vikaspuri)	(Block B-I) Mangal Bazar Sultanpuri	Near Bhagat Singh College (Kalkaji)	
New Seemapuri at Block J-2	Indira Gandhi Camp Block C (Mansarovar Garden)	Nirankari Sr. Sec. School, Kingsway Camp	Bhoominheen Camp Govindpuri	
Patparganj (Near Hr. Sec. School) Pitampura (G.P. Block)	Janakpuri, Block B-I	Pitampura M.P. Block	Bharatiya Rajiv Gandhi Camp Gautam Nagar	
Shastri Camp Trilokpuri	Janakpuri (Near Telephone Exchange)	Near Satyawati Colony?	Griheen Majdoor Seva Sangh (Sanjay Colony) Near Okhla	
Sawaan Park Ext. Seelampur-B	Janakpuri (Near Block A - C School)	Sanjay Basti Timarpur	Harinagar Ashram Railway Line	
	Kirby Place Janakpuri		Indira Gandhi Camp, Harinagar Ashram	
	Kashapur Village Vikaspuri		Jawahar Camp, A-2 Safdarjung Encl.	
	Kirti Nagar (Near Riwari Rly. Line)			

EAST ZONE**WEST ZONE****NORTH ZONE****SOUTH ZONE****CENTRAL ZONE**

Katputli Colony
Shadipur
Mangolpuri, Block-F
New Pusa Road
Block-8

Pankha Road
Janakpuri

Near Payal Cinema
Naraina

Raghubir Nagar
(Between N & P
Blocks)

Rampur Chhetra
A-S, Janakpuri

Sultanpuri,
F-7 Block

Jeevan Jyoti Camp
Okhla

Janta Camp, Tigrī

Katwaria Sarai
(Back of IIT)

Lok Nayak Camp
(Vivekananda
Camp)
Chanakyapuri

Munirka Vihar
Block B and C

Noor Nagar, Okhla
Village

Nanak Durga Camp
R.K. Puram

Nehru Nagar (Near
B, C Block)

New Sanjay Camp
Okhla

Near Nehru Place
J.J. Colony

West of Okhla
Village, Okhla

Tughlakabad West
of Rly. Colony

**LIST OF SCHOOLS AND COLLEGES
FROM WHERE STUDENTS PARTICIPATED
IN THE ASSESSMENT STUDY**

SCHOOLS

Government Boys Senior Secondary School I, Janakpuri

Convent of Jesus and Mary

DELHI UNIVERSITY COLLEGES (NATIONAL SERVICE SCHEME)

D.A.V. Post Graduate College

Deshbandhu Gupta College

Hansraj College

Indraprastha Womens College

JAMIA MILLIA ISLAMIA UNIVERSITY

Jesus and Mary College

Kirori Mal College

Laxmi Bai College

Maitreyi College

Satyawati College

Sri Venkateshwara College

Zakir Hussain College

JAWAHARLAL NEHRU UNIVERSITY

**LIST OF VOLUNTARY ORGANIZATIONS
WHOSE VOLUNTEERS PARTICIPATED
IN THE ASSESSMENT STUDY**

Akshay Pratishan

All India Womens Conference

Amar Jyoti Hospital, Research and Rehabilitation Centre

Ankur

DR. A.V. Baliga Memorial Trust

Bharatiya Admjati Sewa Sangh

Butterflies

CASP Plan Project

Community Services Dept. (MCD)

Deepalaya/Plan Project

Delhi Catholic Archdiocese

Delhi Council for Child Welfare

Delhi Mahila Kalyan Samiti

Gopa Bandhu Sewa Sangha

Indian Youth Club

Katwaria Sarai Youth Association

Mobile Creches for the Children of Working Women

National Federation of Indian Women

Nehru Yuwak Kendras

Prema Associate CEDPA

Sharan Society for Serving the Urban Poor

Social Action Archdiocese of Delhi

South Delhi Welfare Association

Sunder Nagari Development Project

Tamanna

Venu Eye Institute

Vidya Jyoti

WAFD/Plan Project

Yuva Jagriti Manch, Jahangirpuri

YWCA (Sarai Kale Khan Branch)

IHSP sponsored Research Studies

No.	Title	Researcher (Organisation/Individual)
1.	In Search of Shelter: A participatory training programme for women pavement dwellers in planning and design of their own settlement	Society of Promotion of Area Resource Centres (SPARC), Bombay
2.	Analysis of Developmental Problems of Low Cost Income Settlements – A comparative study of Rehousing and Settlement Improvement Projects – A case of Cuttack and Bhubaneswar	K.C. Satpathy N C Shah
3.	Socio-physical evolution of popular settlements and Government supports – Case Study of Bhopal	Neelima Risbud
4.	Socio-Economic Facilities to Slum Dwellers – A Study of Two Squatter Settlements in Delhi	Bakshi D. Sinha Arun K. Ghosh
5.	Appropriate Technical Design – Low Income Settlement Infrastructure	S K Roy P K Dutta Kalyan Roy
6.	Role of Small Contractors in Shelter Sector – Baroda	Chetan Vaidya
7.	Development Controls in Low-Income Housing Activity – Vijayawada City	M V Sharma
8.	Urban Reconstruction – Displacement and Marginalisation of the Lower Income Group	DIALOG Research & Application P. Ltd. Calcutta
9.	NGO Implemented Housing Project and its effect on Community Development	Pankaj Modi Pranoti Modi
10.	Role of NGOs in the shelter process of Low Income People with special emphasis on Housing Finance – The Case of Delhi Catholic Archdiocese	M. Sivashanmugham Istiyak Ahmed
11.	Housing Finance in small and medium towns – Case Study of Shimla	Sanat Kaul Ranjana Kaul

- | | |
|---|---|
| 12. An Interactive Model for Determination of Low Income Housing Demand in Indian medium size towns. | R N Dutta |
| 13. Impact of Tenure Regularisation and Environmental Upgrading Programmes on Shelter Consolidation in Squatter Settlements in Bhopal | Banashree C. Mitra |
| 14. Slums, Squatter settlements and organised sector worker housing in India: Some affordability myths and alternate shelter strategies | R M Kapoor
M S Maitra |
| 15. Evaluation & Impact of slum improvement programme in Ludhiana (Punjab) | Ravinder Singh Sandhu |
| 16. Cost Recovery Practices, Performances and Problems of a Public Housing Agency – Case of Tamil Nadu Slum Clearance Board | M. Sivashanmugham
C. Baskaran
R V Kathiravan
N. Usha |
| 17. A Construction Management Approach to involvement of beneficiaries in EWS Group Housing Project | Prof. T S Narayanaswamy
Dr M Dhanasekhar
A M Sharat Chandra |
| 18. Effectiveness of Site and Services as a strategy for promoting Low Income Housing | Delhi Productivity Council
New Delhi |
| 19. Residential Open Spaces – A behavioural analysis | Vastu-Shilpa Foundation
Ahmedabad |
| 20. Spatio-Temporal Patterns of settlement evolution: A comparative study of two low income settlements in Ahmedabad | Meera Mehta
Dinesh Mehta |
| 21. Infrastructure development in Low Income Settlements – Trivandrum City | C. Ravikumaran Nair |
| 22. Slum Upgradation: A Policy Alternative to Management of spontaneous settlements (Bombay Experience) | V.G. Panwalkar
Pratima Panwalkar |
| 23. Government Policies and Illegal Land Supply by Housing Co-operatives – Jaipur | Neelima Risbud |
| 24. Community Participation for Sanitary in Management in an Urban Slum, Delhi: A Case Study on Harkeshnagar | Asian Centre for
Organisation Research and
Development (ACORD)
New Delhi |

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