

**Natural Disasters and Health : A Case Study of  
A Village Affected by Andhra Cyclone : 1990**

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## CERTIFICATE

Certified that the dissertation entitled "**NATURAL DISASTERS AND HEALTH : A Case study of a village affected by Andhra Cyclone 1990**" by **Mr. PVV Prasad** is in partial fulfilment of requirement for the **Degree of Master of Philosophy** of this University. The dissertation has not been submitted for any other degree of this University or any other University and is his own work.

We recommend that this dissertation be placed before the examiners for evaluation.

Dr S.K Sahu  
(Chairperson)

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(Supervisor)

# I

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## Chapter - I

### INTRODUCTION

In the ecological history of man disasters have been always the enigma of human civilizations, which used to consider them from a humanitarian angle. However, the effects of natural disasters are now viewed not only in humanitarian terms but also in terms of the economy and development of societies.

It is clear that vulnerability to disaster is the product of interaction between the ecosystem, of which man is a part, and the socio-economic relations, which he has created for his survival. Thus, the vulnerability of cyclones has to be studied, not merely as a hazard but in terms of the socio-economic conditions prevailing among the people.

In December 1989, the General Assembly of the United Nations, at its 44<sup>th</sup> session proclaimed the "International Decade for Natural Disaster Reduction (IDNDR)", starting from 1<sup>st</sup> Jan 1990 (UN : 1990 : 1). The proclamation of the decade reflects two main developments namely : the increasing impact of natural disaster in terms of loss of life, physical damage and effects on the economic development of the vulnerable countries and secondly and the progress achieved in scientific and technological knowledge for disaster mitigation.



## DEFINITION OF DISASTER

WHO's defines Disaster as "any occurrence that causes damage, economic disruption, loss of human life and deterioration in health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area" (WHO, 1991:1). The Indian Redcross Society and the League of Redcross Societies define disaster as a "catastrophic situation in which the day to day patterns of life are in many instances, suddenly disrupted and people are plunged into helplessness and suffering and as a result need protection, clothing, shelter, medical and social care and other necessities of life". (Indian Redcross Society, 1977:1). The United Nation Disaster Relief Organisation (UNDRO) subscribed to the definition advanced by Charles E Fritz, who defined disaster as "an event concentrated in time and space in which a society (or a community) undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented.". For the present study, a disaster is broadly considered as a sudden breakdown of the normal ways of life, which encompasses the economic and social aspects of the community and a disruption of the different ways in which people cope up with their problems including health.

## REVIEW OF LITERATURE

In India, attempts were made to understand cyclones even during the ancient and the colonial period. The Enquiry Commissions appointed by the British, published reports on the various dimensions of cyclones. In post-independent India, few studies were conducted on natural disaster such as floods and cyclones. In 1960, Grimshaw studied, "Poonam Dam Disaster", focusing attention on the role of administrative organisations in meeting the crisis situations (Grimshaw Allen, D; 1964). Bramhe, S and Gole, P studied the same disaster but gave emphasis on the social aspects of the disaster (Brahme & Gole; 1967).

The 1977 Andhra Cyclone stimulated some scholars to undertake studies. Cohen and Raghavulu studied issues such as construction of pucca houses, centre-state relations, response from Government and voluntary organizations and disaster politics (Cohen, S.P & Raghavulu, C.V, 1979). In an another case-study of the same cyclone, Gaikwad described the behavioural and management aspects (Gaikwad, 1979). Bose, BPC, studied disaster policies and administration in three disaster settings (Bose, BPC; 1983). Naidu studied the economic impacts on the community and also the state during and after 1977 Andhra Cyclone (Naidu, B.R; 1989).

Very few studies have focused on the health and relief aspects, which are also determined by disaster policies and

politics. This study attempts to analyze with a historical perspective, the emergence of the policies and programmes to mitigate the suffering of people by examining relief - rehabilitative services and health services provided to the people during and after the 1990 Andhra Cyclone.

### OBJECTIVES

1. The main objectives of the study are to review the incidence of cyclones, their effects and relief measures undertaken during different periods.
2. To assess the role of Government organisations and other agencies in relief and rehabilitation programmes in a district in Andhra Pradesh during the 1990 cyclone.
3. To study the health services provided to people during and after the cyclone.
4. To examine community responses to the disaster and the coping mechanisms of the people in a village during the 1990 cyclone.

### METHODOLOGY

#### (a) Data

Data for the study is based on both secondary and primary sources. The primary data was mainly collected in order to cross

check the findings from published reports, research studies, etc. It also helped in giving a first hand account of the problems that the people faced.

Information on the frequency and impact of cyclones in the past and recent cyclones in India and in Andhra Pradesh are collected from secondary sources like Government reports, documents and press releases. Particulars of losses due to 1990 cyclone and also of relief and rehabilitation programmes are collected from Government reports.

For achieving the stated objectives of the study, primary data on socio-economic status of the villagers, their housing, warning processes, relief rendered to the victims and their reactions to major disasters are also required.

(b) Study Area and Sample

In order to collect primary data, a limited study was conducted in Adavuladivi village of Guntur district. This village was selected because it belonged to a severely affected area. Information was collected from 100 households, selected by simple random sampling.

(c) Tools of Data Collection

Apart from the different secondary sources utilized for collecting wide ranging information regarding cyclones, an

interview schedule is developed for collecting primary information. The schedule was pre-tested on a small sample during the first phase of the study and necessary changes were made. It was given in Appendix ' '.

Unstructured interviews with all the key administrative and health officials connected with cyclone relief and rehabilitation at the district and mandal level were also undertaken. Discussions with village people, leaders and elders helped in reconstructing the past event. Observation of village life, relief-rehabilitative efforts that were visible at that time also gave some insight. Case studies of victims provided deeper understanding of the sufferings of the people.

(d) Phases of Field Work

The first phase of the field work was carried out immediately after the cyclone on the 9<sup>th</sup> May 1990, in which all the preliminary information regarding the affected areas and geographical and socio-economic factors were collected. During the second phase in August - September 1990, all the published and un-published reports were collected from the state, district and the mandal level. The interview schedule prepared in vernacular was developed and pretested in the third phase from January to April 1991. Then the interview schedule was administered to the sample. Interviews with the officials and people involved in relief and rehabilitation was completed during this phase.

## Chapter - II

### DISASTERS IN INDIA

History reveals that disasters are not new to mankind. What is new is its increasing frequency and devastating nature. Tropical cyclones, the most destructive natural phenomenon, has got both positive and negative features concerning human life. Severe cyclones are among the most destructive of all natural disasters, capable of annihilating coastal areas, and killing thousands of people. The only positive side of such cyclones is that they provide essential rainfall over much of the land they strike.

Early man in the paleolithic age has witnessed the beginning of dust storms in northern parts of India (Majumdar 1965). The construction sites in the Harappan and Mohenjodaro shows signs of precautionary measures that were taken to withstand recurrent floods which had been an annual feature and it was believed that the growing danger of flood was certainly responsible for the evacuation of Mohenjodaro.

The earliest and the shortest account of flood in the Indian subcontinent is found in Satpata Bramhana and there are late embellished versions in the Mahabharatha and the Puranas. The devastating flood undoubtedly were the most important land mark in the history of the ancient world. Common flood-legends

suggest that the same event has been described in Hebrew and Babylonian accounts. The first recorded floods in India had occurred in 3102 B.C. (R.C. Majumdar 1965). References are there in Manusmriti, Sukraniti and Arthasastra about the special responsibilities of state in times of natural disaster. Similar other spell in the Atharvaveda to avert drought and excess of rains show that these inevitable mishaps threatened agriculture, inspite of some form of irrigation systems that tend to minimise its evil affects.

There is a gap in the information available on natural calamities in the subsequent historical literature, except occasional references in novels and historical essays. There are many historical references to natural calamities in the medieval period. A major flood followed by a famine is reported to have devastated the Kashmere region during 1099-1100 AD (Duff Mable, 1972). There were incidents of plague, which broke out in two famine years 1345-1399 and 1540 in which not less than two thirds of the population of Vijayanagara perished from want (Elliot, 1964). Briggs mentions about the occurrence of several natural calamities in Bahamini kingdom and Maharashtra in 1471 and in Mysore in 1509 (Briggs, 1908-1910). During the 1646 flood in Punjab, the state opened kitchens and deputed special officers to destitute. Shahajan, the emperor at the time also gave liberal remissions of revenue.

In Ancient times, scarcity owing to floods or drought was frequent and sometimes extended to the territories of the whole

kingdom but scarcities due to floods was always localised. The relief in times of natural calamities was in the form of almsgiving, distribution of stored food-grains, remission of land revenue, digging wells, loans and grants and other ameliorative measures. Though, serious attempts were made to stem the full tide of starvation and destruction, relief was provided only on an adhoc basis. Strikingly, the historical references in the Ancient and Medieval periods focused their attention on famines and less frequently on other types of calamities such as cyclones and floods.

### CYCLONE

The term cyclone was originally coined in 1848 by Captain Henry Padington, the then chairman of Marine courts, Calcutta. It is derived from the Greek word 'kyklos' meaning "the coils of a snake". (Business Standards 16-12-1977). This severe cyclone with a core of hurricane winds is also known as "Typhoons" in the north pacific and "Willy Willy" in the Australian region. The oldest cyclone on record is perhaps the one that hit Masulipatnam (also known as Bandar). There is passing reference of this in the records relating to cyclones, maintained by the record room of the collectorate of the Krishna district at Masulipatnam.

### TROPICAL CYCLONES

Tropical cyclones are the most devastating phenomena among all natural disasters having taken more than half a million lives



all over the world in the last five decades alone. They are of particular importance to the Indian subcontinent because of its recurrent appearance in the east and west coastal region.

The Indian Meteorological Department classifies the low pressure systems in the Indian seas as shown in Table (2.1)

Table : 2.1  
Classification of Low Pressure Systems

	Type of Disturbance	Maximum associated wind Circulation
1.	Low pressure area	Not exceeding 32 Kmph
2.	Depression	32 to 50 Kmph
3.	Deep Depression	51 to 63 Kmph
4.	Cyclonic Storm	64 to 87 Kmph
5.	Severe Cyclone	88 to 120 Kmph
6.	Severe Cyclonic storm with a core of Hurricane wind	121 Kmph and above

Source : Regional Meteorological Centre, Madras

#### ORIGIN OF TROPICAL CYCLONES

Tropical cyclones form along the region of inter-tropical convergence zone where trade winds of the two hemispheres (Northern and Southern) meet. This region receives a high radiant energy where the atmosphere can absorb a large quantity of latent heat through evaporation from the sea surface. Moist unstable air begins to rise resulting in the fall of surface

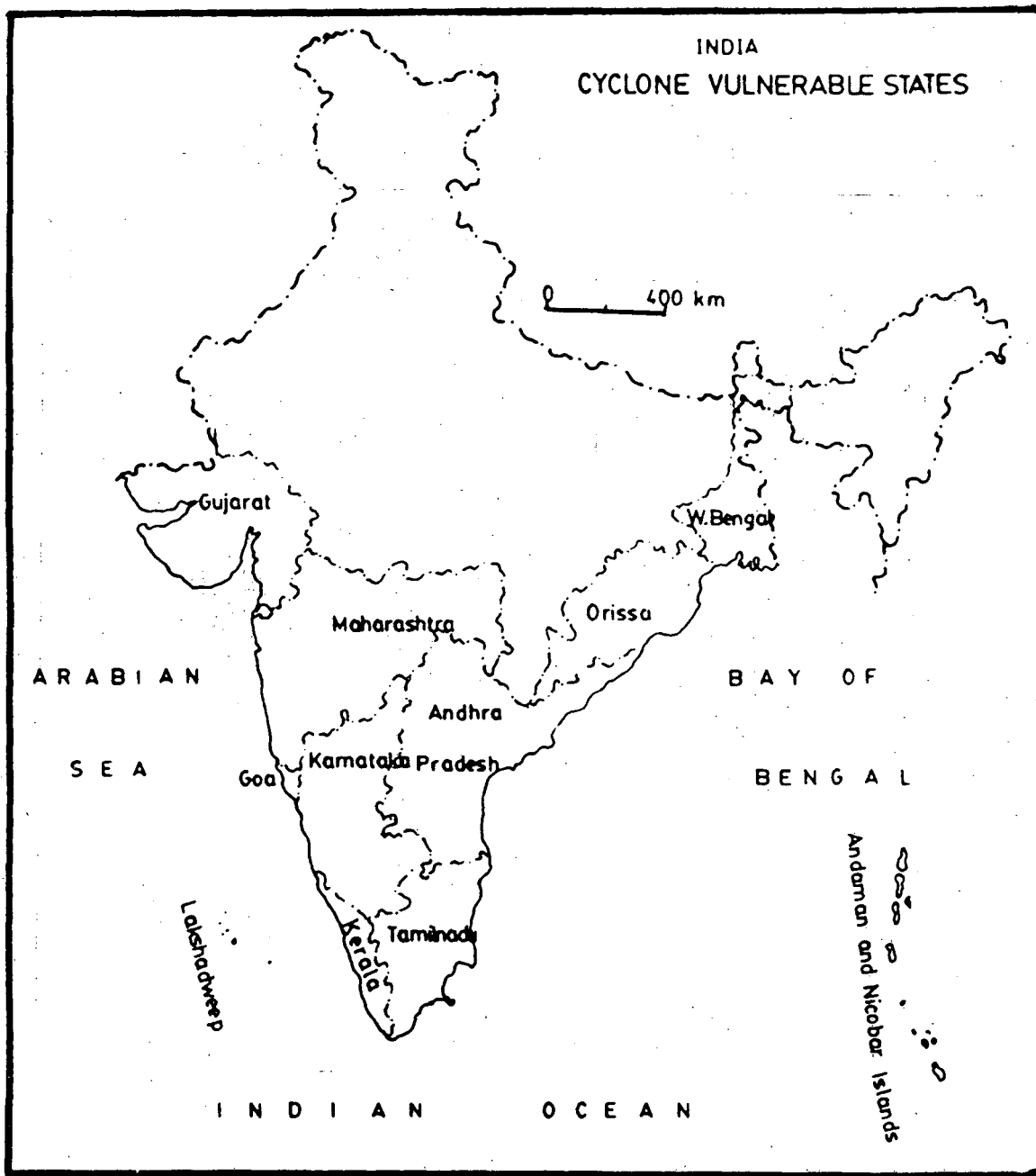
pressure and convergence of surrounding air towards the low pressure area, thereby initiating the process of a cyclone. If all other conditions are favourable, the frequency of the tropical cyclone is observed in the Northern Indian Ocean (the Bay of Bengal and Arabian Sea). Although they are mostly moderate in intensity, they are the deadliest when they cross the coast bordering the areas of North Bay of Bengal. This is because of serious storm surge problem in the area. Table (2.3) gives a list of loss of human lives in association with some of the noteworthy tropical cyclone disasters which occurred along the globe during the past 2½ (two and a half) centuries. Table (2.3) shows that 12 out of 15 noteworthy tropical cyclone disasters (number of human lives lost > 10,000) took place over the coastal areas in the North Bay of Bengal.

#### FREQUENCY AND DESTRUCTION OF CYCLONES

(a) Frequency :

Annually, about 7% of the world's total number of cyclones are formed in the Bay of Bengal and the Arabian Sea. The Indian meteorological department has data on cyclones for more than 100 years. This data shows that maximum number of cyclones have crossed Andhra Pradesh and Orrisa followed by West Bengal, Tamilnadu and Gujarat. The remaining maritime states such as Kerala, Karnataka and Maharastra have comparatively lesser number of cyclones crossing their coasts. The cyclone vulnerable states were shown in Map (2.1).

Fig. 2.1



Every year 5-6 tropical cyclones are formed in the Bay of Bengal and the Arabian Sea, out of which, 2 to 3 turn into severe cyclonic storms. More cyclones occur in the Bay of Bengal than in the Arabian Sea and the ratio of their frequency is about 4:1. May, June, October and November are the stormiest months of the year. The months of October and November are particularly known for severe storms. The frequency of cyclones in the Bay of Bengal and the Arabian Sea during the period from 1891 to 1990 is shown in Table (2.2).

**Table : 2.2**  
**Frequency of Tropical Cyclones**

Months	Bay of Bengal		Arabian Sea	
	Cyclonic Storms	Severe C.S.	Cyclonic Storm	Severe C.S.
January	4	2	2	0
February	0	1	0	0
March	2	2	0	0
April	11	10	2	4
May	15	34	4	15
June	33	5	6	12
July	33	7	3	0
August	27	3	2	0
September	24	15	5	3
October	44	34	14	11
November	40	53	6	21
December	23	18	5	2
<b>Total</b>	<b>256</b>	<b>184</b>	<b>49</b>	<b>68</b>

Source : India, Meteorological Department, New Delhi

(b) Destruction

Three main ways in which cyclones cause large scale damage to life and property are :-

(i) Storm-surges, which is an abnormal rise of sea level causing inundation of coastal areas. It depends on many factors such as the topography of the sea bed, the intensity of the storm, the crossing angle of the storm with respect to the coast etc. The coasts of the North Orissa, West Bengal and the coasts between Ongole and Machilipattinam in Andhra Pradesh and South of Nagapattinam in Tamilnadu along the East coast, and Gujarat along the West Coast are vulnerable to high storm surge.

(ii) Winds, which may cause extensive damage to buildings, structure, Communication Systems etc.

(iii) Rains, which cause wide spread flooding, submerging low lying areas and causing erosion of structures etc.

Table : 2.3

Death associated with Tropical Cyclones		
Year	Country	Deaths
1970	Bangladesh	300,000
1937	India	300,000
1881	China	300,000
1923	Japan	250,000
1876	Bangladesh	200,000
1897	Bangladesh	175,000
1864	India	50,000
1833	India	50,000
1822	Bangladesh	40,000
1780	Antilles	22,000
1965	Bangladesh	19,279
1963	Bangladesh	11,520
1961	Bangladesh	11,468
1971	India	10,000
1977	India	10,000
1963	Cuba/Haiti	7,196
1900	Texas	6,000
1960	Bangladesh	5,109
1960	Japan	5,000
1973	India	5,000

Source : India, Meteorological Department, New Delhi.

### DEVASTATING EXPERIENCES OF CYCLONES IN ANDHRA PRADESH.

The earliest modern historical account of natural disasters is that of the 1696 cyclone that hit Mausulipattinam and the neighbouring areas taking a heavy toll of not less than 20,000 human lives. In 1787, the Ingeran region in the present day East Godavari district experienced a severe cyclone, which took the lives of 12,000 people and caused considerable damage. Two years later in 1789, a tidal wave formed due to cyclone swept the town of Coringa killing about 20,000 people. A severe cyclone hit the East Godavari district in 1832 and again in 1839, in which over 30,000 people lost their lives. The cyclone of 1884 which hit Mausilipattiam is considered worst cyclone experienced by the state in the recorded history.

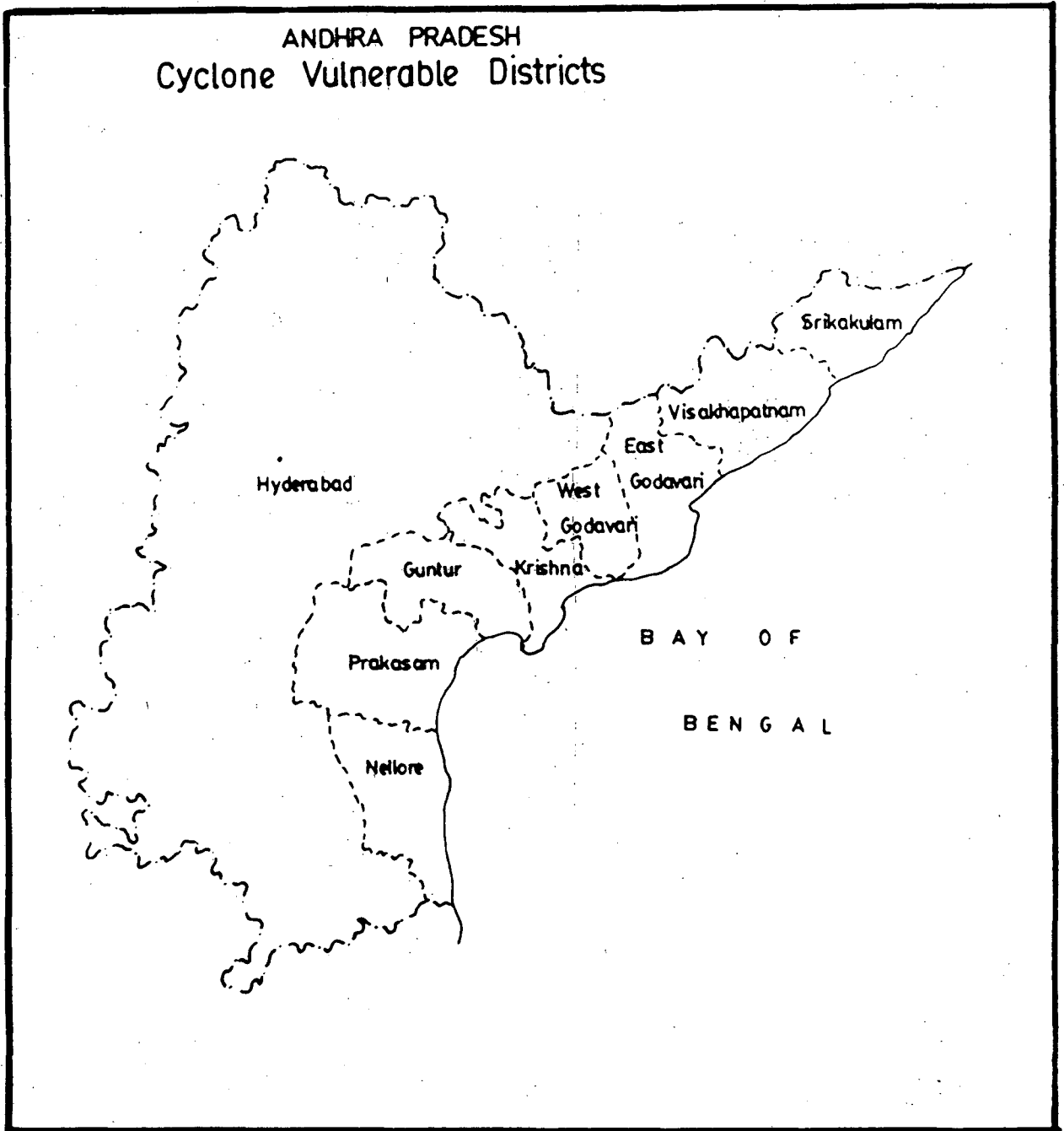
The state of Andhra Pradesh was ravaged by two cyclones in 1969, one in May and another in November. The worst tragedy, however, was caused by the cyclone, which hit the five coastal districts of Krishna, Guntur, Prakasam, West Godavari and East Godavari in November 1977. A tidal wave of an unprecedented nature, almost 5 meters high, hit the coast and penetrated about 16 Kms in land. The quantity of water that flowed from sea to the landmass, within 90 minutes, is estimated at 27 million cusecs. The cyclones caused destruction upto 75 miles on land, and up and down the coast from the centre extending about 50 miles along both sides. There was heavy rain accompanied by a gale of 150-200 Kms, besides about 2.3 lakhs of cattle and 1.57

lakh of other livestock were killed. The total loss of crops was estimated to be more than 300 crores. In addition, considerable damage was caused to the public property like railway lines, telephone communication lines, roads etc.

In 1979, after a two year gap another cyclone hit the coastal area. It caused unprecedented havoc in the districts of Prakasam and Nellore on a very extensive scale. Heavy rains under the influence of cyclones caused damaged to the districts of Guntur, Krishna, West Godavari, Kurnool, Cuddapah and Mehboob Nagar. Floods and cyclones, which occurred in 1983 and 1984 respectively affected the coastal belt. The cyclone vulnerable coastal districts were shown in Map (2.2).



Fig. 2.2



## DISASTER MANAGEMENT

Disasters cannot always be prevented but their effects can always be mitigated. The science of disaster management involves the systematic observation and analysis of measures relating to disaster prevention, mitigation, preparedness, emergency response, rehabilitation and reconstruction. Disaster management is an integral part of development planning. An analysis of the technique of disaster management over the past several decades point to a major shift in the approach, particularly in the post-independence era. Under the colonial rule, the responsibility of the administration was largely restricted to saving Governmental properties and ensuring tax collection. Presently, the span of Governmental responsibility extends from pre-disaster preparedness to rescue, relief and long term reconstruction and development of the area (Aquelli Ahemad, 1981).

## PREVENTION

Prevention may be described as a means designed to prevent the natural phenomenon from causing or resulting in disaster. There are concerted efforts on an international scale for cyclone disaster mitigation. At the request of the United Nation, the World Meteorological Organisation (WMO), developed a World Tropical Cyclone Project in 1973, which all the cyclone prone countries in the world have adopted. An Economic and Social Commission for Asia and Pacific/WMO panel of experts for tropical cyclones in the Bay of Bengal and the Arabian Sea has been in

existence for more than a decade. These international efforts are meant to create better insight into the nature of cyclone.

### PREPAREDNESS

Preparedness is a process by which appropriate steps are designed and initiated to minimize loss of life and property. Practical experience proved beyond doubt that commitment of resources to disaster preparedness in the community yields better results both in terms of economy and effectiveness compared to the sinking of resources in an ad-hoc manner in relief and rehabilitation. The thousands of people who die may not be brought back to life, however, efficient relief and rehabilitation may be. But lives can be saved, if communities are prepared in advance to meet disasters. It envisages a system to facilitate timely warning and effective rescue, relief and rehabilitation. Preparedness includes forecasting and warning. It has two important aspects : building physical infra-structural to mitigate the impact of disaster and building up of responsive communities and agencies so that they respond to disaster situations with appropriate actions. Both are crucial because one become ineffective in absence of other. Physical infrastructure refers to cyclone-resistant cyclone shelters, houses, roads, communication systems, hospitals etc. While community response means the capacity of the community to assimilate the warning and to take appropriate actions like seeking shelters in safer places.

A concerted effort towards long term preparedness was started in India for the first time after the cyclone of 1969 in Andhra Pradesh. The Cyclone Distress Mitigation Committee (CDMC), which included the representatives from the Government of the centre and state of Andhra Pradesh, submitted its report in 1971. This report elucidated the measures to be taken up effectively to warn against cyclones and mitigate their impact. Actions taken on these recommendation so far is related to improvements in forecasting and warning systems. Tamilnadu adopted a plan similar to the CDMC report of Andhra Pradesh and Government of Orrisa and West Bengal appointed a similar committees in 1972 and 1974 respectively. Consequently permanent control was established in each of these states and pucca houses and community cyclones shelters were built in some areas. By and large, it can be said that many of the recommendation made in the CDMC report are yet to be fully implemented.

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Following the 1977 Andhra Pradesh cyclone, a number steps were taken. The Institution of Relief Commissioner in the states was created and the Additional Secretary, Ministry of Agriculture at the Union level was assigned the task of Relief Commissioner, Government of India. Thus, the nodal role was assigned to the Agriculture Ministry, Civil Defence, Home Guards, Army and Air Force. In states like A.P., Tamilnadu, Orissa and Maharastra contingency disaster plans at state and district level were developed. National Building Organisation paid considerable attention to the problems of providing safe houses to resist the fury of natural disasters. Indian Red Cross and other voluntary



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agencies took up the construction of a chain of anti-cyclone shelters in the coastal areas of Andhra Pradesh, Orissa, Goa, Tamilnadu and Kerala. Indian Institute of Technology, Madras established a simulator group for developing a simulator for tropical cyclones, which helps in training efforts.

### WARNING

It is during warning period that the most crucial activities of immediate and direct consequence are performed keeping time as a limiting factor. Warning means informing the people likely to be affected. The first warning system in India was established in 1865 at Calcutta. It is said to be one of the earliest warning system in the world. In 1875, the Indian Meteorological Department was established, which during the last three decades has set-up a chain of observatories over the Andaman and Nicobar and Lakshwadweep group of islands in addition to the coastal observatories. It also set-up an 'S'-band radar in 1970 at Vizag for the first time. Since then centres like Calcutta, Paradeep, Madras, Machilipattanam along the East Coast and Bombay and Goa along the West Coast are equipped with the 'S'-band radar. Detection of the cyclonic storm can be effectively done only upto 400 Kms from the coast. It can warn the districts to be affected, only 18 to 24 hours before the strike. The Indian National Satellite (INSAT 1D) positioned over the equator can keep a watch of cyclones all over the Bay of Bengal and Arabian Sea and can transmit their pictures to the Meteorological Data Utilization Centre at Delhi.

Villagers were often not in a position to comprehend the intensity and the scope of impending cyclone through the warning over the radio.

### EVACUATION

In a well prepared community, many people can move themselves to safer places provided a clear warning is given and it is understood with in a sufficient margin of time. In such a community, the people know, when and where to go for shelter. Such a voluntary action proves not only effective but also remarkably reduces the burden on other agencies, especially on the Government. Generally, evacuation is carried out by the Government and the voluntary organisations. In recent times, scores of public and private vehicles were requisitioned by the district administration to accelerate evacuation as recommended by CDMC. There were instances of forceful evacuation of people from the scene of the disaster. People do not want to be evacuated as they are worried about their belongings. During 1977 cyclone, evacuation never took place to any significant level since there was no Emergency Relief Committee (ERC) as recommended by CDMC at the district level. Whereas during 1979 and in other subsequent cyclones, lakhs of people were reported to have been evacuated at the initiative of district officials. However, it is physically impossible to mobilise enough means to evacuate all the people likely to be affected within a short time. Under these circumstances, construction of more cyclone

shelters with easy physical access is the only answer.

### RESCUE OPERATION

Generally, rescue operations are carried out by the Army and other agencies of the Government using helicopters and boats. Presently, there is lack of coordination and clarity regarding the role and involvement of various agencies involved in rescue operations.

### RELIEF OPERATIONS

Of immediate relevance to disaster victims are medical assistance, water, food, clothes, utensils, essential commodities and temporary shelters. A well prepared system should ensure assistance to the affected people on time. Accumulation of articles relevant to relief work is done mainly by the Government. Some voluntary organisations also store essential commodities and material. However, serious delay often occurs in rushing these emergency relief items to the victims. One of the problems is lack of facilities to establish sufficient number of relief kitchens.

### REHABILITATION

Rehabilitation covers two phases : first, restoration of normal life of the victims; second restoration of public services

and amenities. Concerned Government, voluntary organisations, village cooperatives, agro-service centres and commercial camps can help the rehabilitation process. But most of the disaster prone areas are not covered by these institutions.

Response to the disaster by the Government, voluntary agencies and people are not coordinated properly and their roles are un-demarcated creating a lot of confusion. Ad-hoc groups often dump relief materials in easily accessible places ignoring more needy and interior villages. Certain groups have important political connections and their pleas for involvement cannot be ignored. Subsequently, they exploit the situation to create an impression that the relief is provided by certain political parties. Impractical promises made by the Government and the voluntary agencies contribute in promoting an attitude of dependence among the victims.

### RECONSTRUCTION

The thrust for a long term plan for reconstruction fades out as soon as the immediate needs are met. By and large, the reconstruction programmes have been restricted to constructing pucca houses, cyclone shelters and building roads in a few areas.

There is no involvement of the affected people in these activities, thereby reducing them into mere rituals after the disaster has blown off.



## Chapter - III

### RELIEF AND REHABILITATION IN INDIA

Relief and rehabilitation of disaster victims is an age old policy. In the ancient, medieval and modern periods, the concept and organisation both in form and content changed with the changes in human civilization.

The Encyclopedia Britannica defines relief as "a term used colloquially to designate aid, either public or private, to persons who, because of natural disasters, wars, economic upheaval, chronic unemployment or other conditions which make it impossible for them to take care of their own needs, would suffer under hardships without such aid", and disaster relief as "assistance to persons who are deprived of the essential needs of life, because of natural disasters resulting from flood, fire, earthquake, hurricane, or similar catastrophe". This relief may be from persons of same community or from nearby villages or from different nations depending upon the intensity and magnitude of the disaster.

Such unprecedented events like disasters, needed a coordinated and well organized relief administration under the guidance of proper policy to alleviate the suffering of community. An Analysis of relief policies and practices in different historical periods will give an insight into the

problem of relief administration. This may also help in understanding the emerging trends in modern relief ideologies.

### ANCIENT AND MEDIEVAL INDIA

Ancient India witnessed the construction of granaries which were used to store food grains, to be used in times of distress. The state in Ancient India also had special duties to perform whenever natural calamities occurred. Kautilya's law prescribed that the king had to husband resources for providing emergency relief. There are eight kinds of providential visitations : They are fire, floods, pestilential diseases, famines, rats, tigers, serpents and demons.

According to Kautilya's Arthashastra, during rainy season, villagers living on the banks of rivers had to move themselves to safer places. They had to provide themselves with wooden planks, bamboos, and boats. They should, by means of bottle guards, canoes, trunks of trees, or boats, rescue persons who were being carried off by the flood. Persons neglecting rescue, with the exception of those who had no boats etc. were fined 12 panas. On new and full moon days, rivers would be worshipped. Experts in sacred magic and mysticism and persons learned in the Vedas had to perform incantations against the rains. During drought also such rituals were performed. (Samasastry. R; 1967:237).

The Arthashastra also directed the king to show favour to his people by providing them with seeds and provisions during famine.

He might either do such kinds of works as were usually resorted to in calamities (repair of ruined buildings) or he might show favour by distributing either his own collection of provisions or the hoarded income of the rich among the people or seek help from his friends amongst kings. The policy of thinning the rich by exacting excessive revenue or asking them to give a share of their accumulated wealth was also resorted to. The king with his subjects might also emigrate to another kingdom with abundant harvest. He might remove himself with his subjects to seashores or to the banks of rivers or lakes or he might cause his subjects to grow grains, vegetables, roots and fruits wherever water was available. He might, by hunting and fishing on a large scale, provide the people with wild beasts, birds, elephants, tigers or fish (Samasastry. R; 1967:238).

If the village heads failed to fulfil their obligations in times of natural calamities, Kautilya suggested punishments and fines for their negligence of public duty. (Jagannadhan. V; 1968:221).

It is impossible, considering the scope of this study, to portray here, even in such scant detail, all the calamities between 297 and 1770 A.D. It is a tale of infinite destruction of human life, some times resulting from wars and oppressive Governments, and occasionally, spasmodically restrained by the energy of a particular monarch or the generosity of the rich. But through all the turmoil of wars and the rise and fall of dynasties, despite the absence of any organised system of

protection or alleviation of suffering, it is impossible to trace the development, however slow and indeterminate, of the methods adopted and the success attained in relief.

Wars and lack of communication hampered importation of necessary goods and material. It was to the supplies of stored grains that the rulers and the people mainly looked for protection against calamities.

Mohammad Tughlak had the distinction of being one of the first to take vigorous measures to alleviate the effects of drought in 1343 A.D. In addition to six months supply of corn to the inhabitants of Delhi, advances were made from the treasury for the ordinary cultivation of land and for the digging of wells (Elliot; 1964:620).

During the famine of 1557 in Kutch, and that of 1746 in the district around Bombay, relief was provided by directly distributing cooked food to the starving. But in these, as in so many other cases, there is no evidence to show that any thing was done outside the limits of the capital. The poor vacated the country to come to the towns on such occasions whereafter pestilences followed. History shows that the first impulse of the people, when food is scarce is to migrate in to neighbouring districts (Briggs; 1973:425,428).

Among the preventive methods adopted by the various Governments, undoubtedly the most important has been irrigation.

Irrigation in India is as old as history. In latter times it was the special pride of the Mughal Emperors. But although Mohammad Tughlak had wells dug during the famine of 1345, and the waters of the canal built by Akbar were for "rich and poor alike", the vast works undertaken by Mughal chiefs were aimed at increasing the magnificence of their capital city, than for promoting fertility of the soil (Irfan Habib, 1963: ).

This protection of land against drought and the storage of grain by the people and Government, constituted two main protective measures, and were indeed the possible ones.

#### CALAMITIES UNDER COLONIAL RULE

Historical references in the ancient and medieval periods focused their attention on famines and less frequently on other types of calamities such as cyclones and floods.

During the Machilipattinam cyclone in 1697 and Coringa (East Godavari) cyclone in 1706 no official relief measures were provided. Neighbouring communities rendered relief measures like distribution of cooked food, drinking water and grains. (Mimeo, 1697)

The death of Aurangzeb in 1707 and the subsequent disruption of the Mughal Empire resulted in at least half a century of violent transmutation during which the French and the English struggled for predominance. There are no available

reports on natural calamities during this period.

During the rule of the East India Company from 1758 to 1857 as many as seven major cyclones particularly in the Madras province were experienced by the population. The East India Company, which had assumed the revenue administration of Bengal, Bihar and Orissa became for the first time the agency responsible for ameliorating distress. In the initial years, though they spent money on relief expenditure, its benefits were counterbalanced by an almost equal incompetency. The double Government initiated by Clive was proving unworkable and merely gave greater opportunities for fraud and speculation. It was not till 1769 that supervisors were appointed to administer famine relief (Loveday, A; 1985:31).

On May, 1787 Ingram (East Godavari) region again experienced a disastrous cyclone. The Acting Resident reported to the Governor two days later that "we are in the utmost distress for even necessities of life.... not even a bag to put on, even the common necessities of life or a house to shelter from the inclemencies of the weather.... the poor black people are running up and down, crying and lamenting the loss of relations from the inundation" (The Hindu. 1977). In response, the Presidency Governor (Sir Archibald Campbell) and the council at Madras despatched 500 bags of rice and vegetables to provide relief to the victims. For the factory workers some madira wine, tea and sugar candy were sent through boats to meet their needs. In another incident, the Government provided modicum of relief and

directed the zamindars to help the victims. But the latter were not in a position to help victims as they themselves incurred severe losses by successive cyclones. The victims therefore were left to their fate. (Naidu, B.R, 1989:82).

Guntur district was affected by a severe cyclone in 1800. The District Officer could not visit the affected areas as communication were disrupted. Instead he relied on field reports from subordinate officer in the affected area. As a consequence the transmission of the report to the Madras Government was delayed by ten days and victims were left to fend for themselves. The Government felt that it was not necessary to act, as the crisis was over (Naidu B.R, 1989 : 82).

The East India Company was more concerned about the loss of revenue from agriculture trade and commerce on account of cyclones, flood and famines. There was no statistical base regarding the agriculture economy. Adequate communication and transport facilities were also not available. The submission of the report by the local agent of the company to the provincial headquarters, where decisions on sanction of relief, had to be taken, was a time consuming process. At the provincial level, the authorities used to take some more time to process the reports and take decisions. Then the relief supplies had to be despatched from the provincial headquarters by slow moving transport by country boats. In this context, there was also a feeling among Government circle that natural calamities were beyond human capacity to counter or mitigate. (Indian Famine

Commission, 1901).

Due to repeated cyclone devastation in Machilipattnam, the Britishers shifted all their establishment to Madras. A proposal was mooted to shift the district headquarters from this town, but this was abandoned. However, the military cantonment was moved out of Machilipattnam after the 1864 cyclone. The salinity caused by the 1864 tidal wave could not be cleared by human effort, however, another major flood which swept the area, 18 years later, in 1882 cleared the salinity of the land. It was observed that until some official visited them and arranged distribution of the food and buried the dead, the villagers remained helpless and apathetic. Many survivors were without food and water for days together. It was noted that the Government relief to the tidal wave victims was not always adequate and timely. (The Hindu, 1977).

The method of alleviation of suffering grew from a rough system of temporarily and hurriedly organised employment programme to an infinitely elaborated and detailed permanent scheme. In 1868, a supplement to the Gazette of India was published containing a summary of measures authorised by the Government for the relief of the starving people in times of drought. (Loveday A, 1985)

Construction of irrigation facilities had meanwhile progressed rapidly. The means of communication also improved with the East India Railways alone importing one third of the



necessary grain. The problem was not the distribution of the supplies. To the Government, it meant ways to obtain the greatest possible return for their money with the least possible loss of life. It involved two considerations; the remunerativeness of the work undertaken and the enforcement of work from all those physically capable. The population was roughly divided into three classes.

(i) Those capable of work in large public undertakings.

(ii) Those, who were deserving of charity, but who required to work in the poor houses, wherein they were also fed.

(iii) Those, who on account of their caste or decrepitude, were unable to leave their homes. Direct assistance in their homes was given by agents under the supervision of the Deputy Collector and Inspector.

Such was the main foundation of that organization of famine relief, which was adopted in 1860. It was modified several times in accordance with the demand of later experience. The core of this system had not totally disappeared during subsequent institutional structure. Almost two decades prior to the appointment of the first Famine Commission, both the Smith Commission (1861) and the Campbell Commission (1866-67) suggested several measures of relief during natural calamities. Successive

Famine Commission reviewed the famine situation from time to time and suggested suitable measures, which were duly incorporated in the Provincial Famine Code ( Madras Famine Code, 1927).

It was in the second half of the nineteenth century, certain steps were taken to record the effects of the natural calamities like cyclones, floods and earthquakes.

During the first half of the twentieth century, the Andhra coast witnessed cyclones in 1903, 1916, 1927 and 1936. The relief administration was routinized to a large extent with specific rules and procedures as recommended by successive Famine Commissions. Subsequently, some of the features of the famine codes were adopted in providing relief to the cyclones and flood victims. The same code and procedures were followed by the Government of Independent India. There was no change in the attitudes of the Government with regard to cyclone and flood relief.

#### CDMC REPORT - A STEP AHEAD

In 1969, a distinguished Cyclone Distress Mitigation Committee (CDMC) was appointed by the Union Government. The committee was constituted as a result of the havoc caused by the cyclone of 17<sup>th</sup> May 1969, which struck the coastal districts of Guntur and Krishna. It suggested a number of measure to mitigate human suffering and to reduce the loss of life and property. It offered a model cyclone plan for Andhra spelling out in detail,

the steps to be taken by various Governmental agencies before, during and after a cyclonic storm. (CDMC Report, 1971, 18:30).

Unfortunately, the CDMC report has been literally gathering dust in various central and state offices, which had and still have joint responsibility for its implementation. In the political controversy that ensued after the cyclone, neither the Union nor the Andhra Government have made much reference to the lack of follow-up on the CDMC report. The existence of the report and the failure of successive Union and Andhra Pradesh State Government to implement many of its recommendations or to drag out the implementation process to inordinate lengths can only cause embarrassment to politicians both at the Centre and in Andhra. The issue of preparedness was never raised in the intervening years. To that extent, all share the political and moral responsibility for whatever needless death and destruction occurred. As is often the case, when all are guilty, none is guilty (Cohen S.P, Raghavulu C.V, 1979; 64).

#### THE 1977 CYCLONE

In the post-independent period, cyclone of 1977 that hit the Andhra Coast was the most serious one in the history of cyclones. It caused enormous destruction with a death toll of 10,000 and an estimated loss of around 2,000 crore. An emergency meeting was held at the state secretariat with senior officers on the morning of 20<sup>th</sup> Nov 1977; a decision was taken to depute senior IAS officer of the rank of Commissioner to Krishna, Guntur, West

Godavari and East Godavari districts to direct rescue and relief operation and to take on-the spot decisions. An aerial survey of the cyclone affected area was done on the 21<sup>st</sup> Nov by the Chief Minister. (Eenadu, 1977). On 22<sup>nd</sup> Nov 1977, the Collectors of Krishna and Guntur districts mobilized the entire staff from within the respective districts. Subsequently, after one week the Government issued orders to mobilize staff, trucks and jeeps from neighbouring districts. Rescue operations were undertaken immediately from the early hours of 20<sup>th</sup> Nov 1977. First, they shifted the victims to safer places from the affected villages. The state Government organised 199 relief centres in nearby towns in Krishna, Guntur, East Godavari and Prakasam districts. In relief centres, cooked food was provided for nearly two weeks in addition to medical care and clothes. The state Government granted relief to the victims in the form of Rs 1000/- as ex-gratia to kith and kin of each bereaved person, Rs 150/- to fully damaged houses and Rs 75/- to partly damaged houses as house grant and Rs 50/- to each family to purchase utensils. In addition, a package of rice and provisions, bamboos and palm leaves to erect temporary houses in the severely affected areas were also given.

Burial of the dead posed a major problem as the corpses were strewn all over the tidal-wave affected areas in the slush and mud. Initially, the state Government requested the Army to clear the corpses. The request was turned down (Cohen and Raghavulu, 1979; 68-72). Then the state Government organised its own team of corpse disposal consisting of personnel drawn from the police,

local Government prisoners, volunteers, hired labourers and local miner from Singareni Collieries. Though considerable time was spent in corpse disposal, there were no epidemics, probably due to inundation of salt water from the sea.

Medical teams of the state Government voluntary agency and Army Medical Corps had cleared and disinfected the drinking water sources. The staff from medical and public health departments, medical colleges and local authorities took massive inoculation programme. Some international voluntary agencies rushed medical assistance in the form of drugs, equipment and personnel. Drugs were mobilized from the manufacturing units, neighbouring states, foreign countries, UNICEF, etc. Initially drinking water was provided by Army helicopters and local bodies. Later the Panchayat Raj departments sunk bore wells as part of a crash programme.

#### REHABILITATION AND RECONSTRUCTION

The rehabilitation and reconstruction work in cyclone affected areas were taken up from January 78 (GOAP, 1979). The major measures were :-

1. Reconstruction of public buildings.
2. Restoration of roads and buildings.
3. Restoration of aided schools and other educational

institutions.

4. Restoration of irrigation works.
5. Reconstruction of tidal banks.
6. Restoration of drinking water sources.
7. Restoration of electrical installations.
8. Restoration of drainage systems.
9. Repair and reconstruction of municipal property.
10. Construction of link roads for villages in the coastal banks.
11. Rehabilitation of fishermen, artisan and craftsmen.
12. Resettlement of the people rendered homeless.
13. Assistance to agriculturists.
14. Repair of boats and godowns.
15. Restoration of medical and public health services.
16. Extension of orphanages.

These were undertaken by various Government departments.

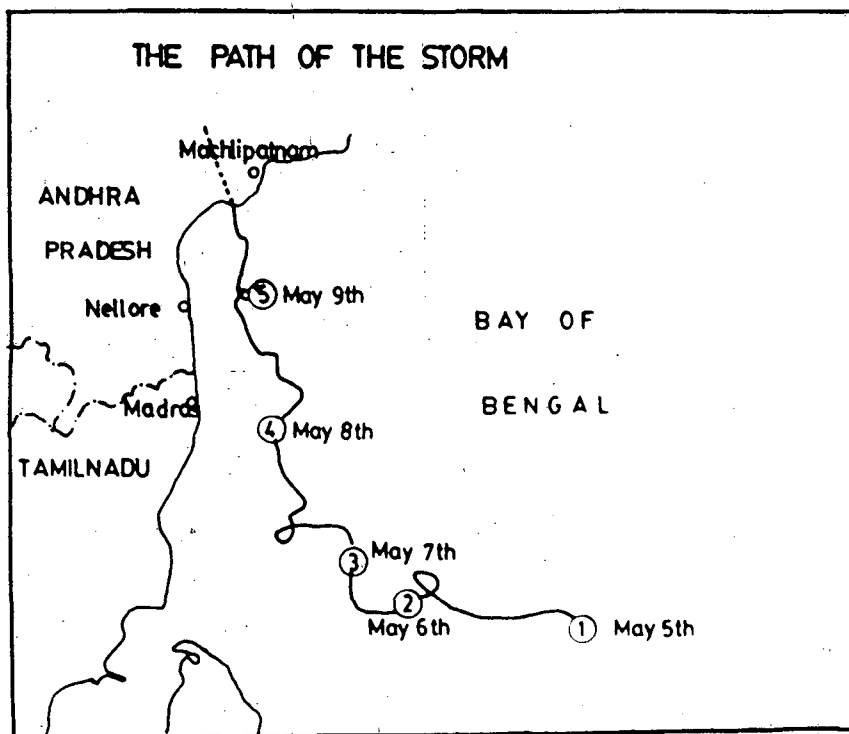
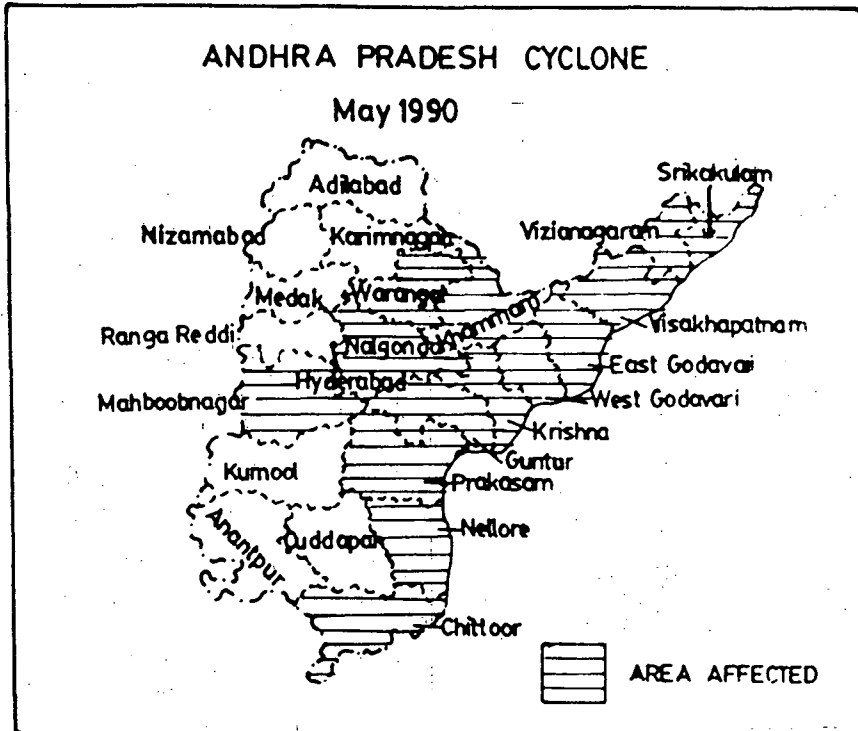
The same policy was followed during cyclones and floods in 1979, 1983, 1984 and 1990 by the state and Union Government

#### 1990 CYCLONE - DYNAMICS OF RELIEF

The 1977 cyclone that struck coastal Andhra created a sense of urgency to prepare further to cope with future disasters. With the lessons learnt from the disasters of 1979, 1980, 1983, 1984, the State bureaucratic machinery got itself equipped to take advanced measures. The advances made in the satellite

technology for tracking down the path of cyclonic storms helped in advanced warning. Advanced warning was publicly announced on 5<sup>th</sup> May 1990 itself regarding the coming threat of cyclone. The path of the storm was shown in Map (3.1).

Fig. 3.1(a & b)





A cabinet sub-committee was formulated to oversee the relief operations comprising different ministries along with heads of departments. The committee was deputed to Vijaywada, "which is closer to the area likely to be affected". As a precautionary measure, one lakh families had been evacuated from vulnerable and low lying areas. About 350 relief camps had been set-up to feed the people (The Hindu, 1990; 1).

In a statement, the Relief Commissioner announced that about 4 lakh people in 500 cyclone battered villages had been evacuated and 550 relief camps were opened. The administration mobilized 700 vehicles and organized 500 official parties to go to the affected areas and arrange relief, while word has yet to come from inaccessible and marooned places. According to official figures, the total loss of life was about a thousand.

The official estimate of the total loss amounted to an incredible Rs 22,000 million. 1.6 million houses were razed to the ground rendering over 12 million people homeless and utterly helpless. Power lines worth Rs 1,000 million bowed to the fury of the storm, while roads and buildings worth Rs 3,000 million were quelled. It was a massive watery grave for livestock worth Rs 450 million. The bountiful agricultural sector in the state suffered a loss of Rs 1,700 million, while the loss to its horticultural sector was a mammoth Rs 5,300 million. Irrigation, the lifeline of agriculture suffered a colossal loss of Rs 1,800 million. The service sector incurred a loss of Rs 1,100 million. It was indeed a 'Black Wednesday'. (G.O. A.P. 1990). Area affected was shown in Map (3.1).

The state Government decided to constitute an all party committee to review and monitor cyclone relief and rehabilitation programme with immediate effect. Similarly, a district committee was formed with the collector as the convener and the respective Ministers as the chairmen. In this setup, one can visualize the overwhelming dominance of the ruling party. (The Hindu, 1990).

The Prime Minister on his second visit to the state announced the disaster as a national calamity and promised the state Government all possible help and asked all the political parties to work unitedly beyond their narrow political interest.

The relief measures were not, however, free from politics. There was a tussle over the relief work between the Ministers in-charge and respective bureaucrats in Guntur district. (Eenadu; 1990).

There was another controversy over collecting public funds by private personnel and politicians. When the opposition leader, who was an ex-chief Minister announced that funds from public will be collected by organising concerts, the Chief Minister made it clear that he would not brook private individuals including politicians collecting public funds in the name of cyclone relief. (The Hindu, 1990).

The State Government made a massive arrangement by spending lakhs of Rupees to make huge boxes for collecting public funds, which were kept in the premises of the District Collectorate.

When these boxes were opened periodically negligible amounts were found contrary to their expectations.

While the relief was most needed by the people on the coast, where the sea had moved about 5 Kms inland gobbling up villages, it first reached people in towns such as Guntur and Vijayawada. People in the urban areas were more vociferous and the political leadership came to the forefront taking over the responsibility of distribution of the relief. Delay in distribution of relief took an ugly turn in many parts. In Manglagiri, the Sub-Collector ordered re-enumeration of the beneficiaries and was met with a road blockade, gherao and burning of buses. The people of Yedlapalli village gheraoed the Sub-Collector for six hours, complaining that people in the nearby village had been given relief while their village was left out. The collector and the superintendent of police arrived in the village at night and imposed curfew. People were beaten-up as if "to teach them a lesson". The police opened fire in Appapuram village, killing two brothers, who joined the protest against inadequate distribution of the relief. (Frontline 1990).

The delay in the distribution of rice in the affected villages much after the roads were cleared caused much resentment. For instance, people in Golapalam received no rice even on the fifth day. The survivors had to live on coconut milk and 'toddy fruit' for two days. Strangely, news-persons reached many villages before Government agencies. The delay in relief operations jacked up the open market prices of rice to Rs 12/-

per Kg and Kerosene to Rs 8/- per Litre in some villages.

Officials had to be content with many problems when the distribution of the free rice began. There were many people without ration cards, many others lost them in the cyclone. To surmount this difficulty, Sarpanches were asked to issue slips to enable people to get 10 Kg rice free from the Government. Complaints galore that some people received rice twice.

The bureaucracy's efforts at the relief stage was not sustained through the stage of rehabilitation work. There was a tendency to relapse into response patterns characteristic of routine Governmental administration. (Raghavulu, 1984).

### POLITICS OF RELIEF

The magnitude and intensity of politicization of a disaster, seems to be related to the timing of the disaster and the state of preparedness and the orientation of the key political participants at various levels. The degree of politicization of the relief and rehabilitation process has implications for the functioning of relief mechanisms. Besides activating conflicts, politicization seemed to dilute the norms concerning eligibility for relief assistance. (Raghavulu, 1984:162).

The real agony is regarding the de-humanization that now features the process of providing relief to those stricken by natural calamities. How to gain maximum political advantage has

emerged as the principal consideration in the disaster relief. In this consideration, it is an instrument for expanding or strengthening one's political base; it provides an opportunity to prove to the media that the so called 'Charisma' is not altogether played out. In the ultimate analysis, 'Charisma' is a function of the amount of the funds one is prepared to advance or able to wrangle. A natural calamity, in case it is of sizable dimension, thus becomes the occasion to propagate the message of one's pity and benevolence; the suffering people are only a convenient or rather an inconvenient - point of reference (Ashok Mitra, 1987).

In the case of disaster relief, until 1972, central funding was determined by an ad-hoc assessment of the situation by a central team of officials. Central money was advanced as part grant and part loan to the concerned states. This procedure was changed following the recommendation of the Sixth Finance Commission (1973). The Union budget used to contain a specific provision for meeting the expenditure on natural calamities. Once expenditure exceeds the ceiling, advances are to be made available to the state by the Union Government from the Consolidated Fund of India, on the request of State Government followed by an on-the-spot assessment by a central team.

Thus, one group of officers belonging to the All India services sits in judgement on a document prepared by another group of officers again belonging to All India Services. The former represents the centre and the latter represents the state

Government. The union Government, is however, factually in command of the Consolidated Fund of India. Inevitably, politicians get into the act at either end : they apply pressure on their respective officers. The procedures of arriving at a correct assessment of the needs and requirement is in no time reduced to a dirty game. (Ashok Mitra, 1987).

The policy of advanced plan assistance towards relief and rehabilitation represents a reversal of the approach followed since the days of the British Rule in India. Famine relief and cyclone relief were considered a welfare function, and assumed by the central Government even before it entered the field of economic development or ownership of economic enterprises. The centres fiscal role in the Andhra cyclone, virtually amounting to relinquishing an age old function of the Government. If pursued consistently in the phase of genuine loss and disaster in the state, could have contributed to a serious crisis in India's federal system. (Cohen S.P & Raghavulu C.V, 1979:76).

In order to come out of this time consuming process; there is a need of a permanent machinery, isolated from political and other influences and which is equipped to apply objective criteria for quantifying the magnitude of loss and damages.

A regular machinery can be established in the lines of the Comptroller and Auditor General's setup to monitor, on a continuous basis, the natural disasters in the different parts of the country. (Ashok Mitra, 1987).

## Chapter - IV

### DISASTER AND HEALTH

This chapter discusses the factors and their role in evolving specific health institutions, medical manpower and their response to disaster in Andhra Pradesh with emphasis on the study area i.e. Nizampatnam. It also analyses contributions of related factors to the success or failure of the manpower in bringing health to people at the time of disasters.

#### STATE OF HEALTH SERVICES IN ANDHRA PRADESH

A state level working group on Medical and Public Health reviewed the strategy of the first two plan periods and stressed that "any country where the general level of health is low due to malnutrition and other factors, should lay greater emphasis on the curative side. Infact till the general level of health is considerably raised by an increase in the standard of living, the curative aspect of health programmes will be all the more important". (GOAP, 1960:204). Given the perspective, the thrust of the subsequent plan periods was to strengthen medical education and teaching hospitals in the state. Nearly two third of the expenditure is incurred on curative services through establishment of hospitals and dispensaries. Allopathic services have gained predominance over indigenous medicine by claiming nearly 95% of the total expenditure in the medical sub-sector (Kumar PVS, 1984).

Different plan documents give an insight into the emphasis of the Andhra Pradesh Government regarding the state of its health services. During the second and third plan periods, stress was laid on medical education, establishment of hospitals and dispensaries and control of communicable diseases. Control of communicable disease alone got 75% and 85% respectively of the total expenditure whereas only 7.1% and 3.17% respectively of the total expenditure was allocated for the establishment of the primary health centre. (Rama V Baru, 1987; 44).

During the fourth plan period the basic objectives of the Government was to expand curative facilities across the state. Accordingly, the plan envisaged strengthening and expansion of taluk headquarters, hospitals, provisions of adequate facilities in primary health centres and giving facilities for specialized treatment at district headquarter hospitals. Thus, once again, medical and nursing education gained importance. Infact nearly 65% of the total expenditure was incurred on the medical sub-sector, while it was around 30% on public health and 5% on indigenous systems. (GOAP, 1969).

During the fourth plan period, the state Government undertook a review of the medical and health sector, and highlighted the issue regarding institutions and manpower. It was felt that the total number of doctors produced was not being absorbed. The posts of doctors in Primary Health Centres were lying vacant, and most of the Primary Health Centres did not have adequate buildings, drugs or equipments. It also pointed out



that while there had been some improvement in the teaching hospitals, the expansion of medical facilities was lagging behind in the rural areas. Based on these observations, it was proposed to upgrade all taluk and primary health centres as a measure to strengthen the referred system during the fifth plan. (GOAP, 1972, 69-74).

During the Sixth Plan, the thrust was similar to the Fifth plan, which emphasized strengthening of district, taluk and teaching hospitals and expansion of primary health centres. Medical relief to teaching hospitals and medical education were strengthened by allocating almost 65% of the outlay for modern medicine. (GOAP, 1980; 341, 345).

During the Seventh plan period, there has been an increase in the outlay in medical and public health services. In continuation of the earlier policy, it has been proposed to strengthen taluk, district and teaching hospitals. It was proposed to provide super-specialties in all hospitals. In addition to strengthening hospitals, the plan also envisaged greater inputs into rural health care through the minimum needs programme. (GOAP, 1986).

In brief, while the outlays on medical and public health have been meagre, the priorities have been for strengthening medical education and hospitals, which has resulted in the expansion of the hospitals at the expense of the Primary Health Centres.

The establishment of primary health centres that are supposed to provide services to vast rural populations were at a low key except during the 1985-86 with the introduction of mandal primary health centres.

### GUNTUR DISTRICT : HEALTH SERVICES

In the Guntur district there was a department of medical and public health service as early as 1786 during the colonial rule. A medical college was setup in Guntur town as early as 1946 to train licentiates. While the health services did develop during the half century preceeding the formation of the state, at the time of the formation of the state, Guntur district had a large number of hospitals and dispensaries (GOAP, 1977; 197)

In Andhra Pradesh, the location of PHC was governed by the AP panchyat samitis and Zilla parishads Act of 1959. As per this Act, a specified amount of land and cash had to be contributed by the villagers for setting up of PHCs (GOAP, 1971:8).

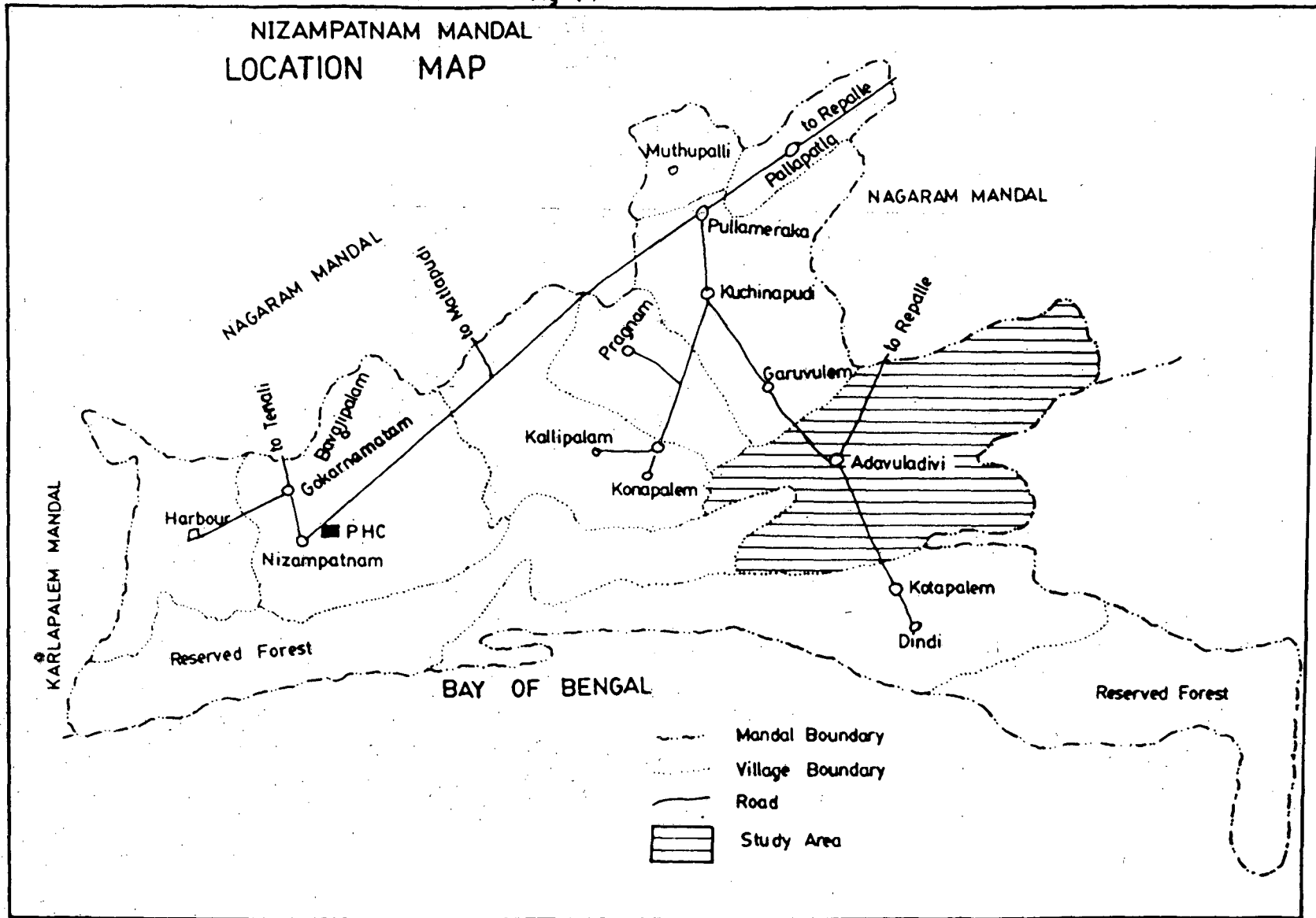
Due to the contributory nature of the scheme several PHCs were not ideally located because any village, which came forward with the required contribution was selected even if it was unsuitable for locating institutions. However, local political pressures continued to play an important role in location of these centres. Due to the uneven nature of the distribution of these centres, coverage was much reduced.

The sudden spurt in the increase of PHUs during 1986 was due to the policy of a new regional party, which assumed power in state politics. In order to consolidate the power at the local level, they made changes to the previous panchayat raj system and introduced the mandal system, which in turn created mandal primary health centres. These measures are useful to local leaders to consolidate their power.

Guntur district has a higher bed strength partly because of the location of the teaching hospital. The office of the regional director of medical and health services, established in the year 1979 is located in Guntur. Each Mandal headquarter has a PHU. At village level, sectors have been formed for a population of 20,000 and there is a sub-centre for a population of 5,000 in a group of 2 or 3 villages besides a village health guide for every 1000 population. At present there are 57 mandals with a population of 40,94,558. The urban population is 10,81,355 under 10 municipalities and the rural population is 30,17,723 under 729 revenue villages. Guntur district has 58 primary health centres, three Government hospitals, three subsidiary health centres, 6 Government dispensaries, 2 PM and PH centres, 6 Taluk hospitals, 1 dispensary beside one Government general hospital, one medical college and one Government fever hospital.

Fig. 4.1

# NIZAMPATNAM MANDAL LOCATION MAP



### NIZAMPATNAM MANDAL

Nizampatnam Mandal, which is one of the 57 mandals of the Guntur District is surrounded by the Bay of Bengal on the South, Karlapalem Mandal on West, Nagaram Mandal on North and Pitlavanipalem mandal on the East. The total area of the Mandal is 129.5 Sq Km. with a population of 49,971 as per 1981 census. The proportion of the Scheduled Caste in the population is 5.6% and that of Scheduled Tribe is 3.1%. Literacy rate is 26.9% as against the district average of 36.1%. Chief crops are paddy and groundnut. Predominantly the population comprises of the Agnikula Kshatriya (Fishermen) and Gowda castes, in the border villages. (GOAP:1985).

### PHC - NIZAMPATNAM

Primary Health Centre, Nizampatnam is one of the oldest PHCs in Guntur district, which was started in the year 1959. It was mainly intended for the increasing business and official community in the region, due to the location of the Nizampatnam port. It is located at the one end of the Mandal as shown in the Map (4.1). Its area of operation and accessibility was limited to Nizampatnam village and its surroundings.

### INFRA-STRUCTURAL FACILITIES

The PHC area is divided into 3 sectors. Each sector headquarter is equipped with one sub-centre. The mandal has 30

sanctioned posts, out of which 6 posts are vacant, including one at the PHC. The PHC is characterised as a six bedded hospital. However, no beds are available in the PHC. The PHC is situated in a permanent building and resident quarters are available for two medical officers and other staff. There is no boundary wall to protect the assets of the PHC nor is there any water supply or sanitation facilities for patients. One salt water well is located within the premises. Although most of the villages are electrified. One can hardly find electrical installation at the PHC.

Through informal discussions, it was found that 50% of the staff are involved in secondary business and 60% of the staff are staying in a nearby town. 70% of the Basic Health Workers are working in their respective native villages, ever since they joined the service.

The ICDS project is in operation in the area with 56 anganwadi centres. These Anganwadis are popularly known as 'upma' schools.

According to the Anganwadi Worker, the usual practice followed in the Anganwadi is that most of the supplies would be sent to the market, which in turn goes to farms as fish and cattle feed.

These are the conditions of the peripheral health system in this mandal, which got the 'best performance' award from the

Medical and Health Department. It was observed that the vacancies existed for long at the peripheral level because doctors and health workers were unwilling to work in these places. Added to this, there is the problem of shortage of medicines, equipment, vehicles etc. This provides a brief picture of the health service system in the district, which is supposed to respond effectively to the recurrent phenomenon of floods and cyclones.

#### RESPONSE TO DISASTER

Due to the impending cyclones, threat from time to time, the Government of Andhra Pradesh had setup a medical stores in Vishakhapatnam and in Guntur.

It was advised that the Medical and Veterinary Department be fully equipped with the required drugs and vaccines for taking preventive steps after cyclones and to arrest the spread of epidemics (GOAP, 1990:13). CDMC recommended to formation of a cyclone committee, "The committee should meet in April and August every year as these months fall just before the cyclone season of the Andhra Pradesh Coast. In these meetings, a comprehensive review of actions already taken and yet to be taken, is made". (GOAP, 1971:5).

As a result of this recommendation, after 1977 cyclone, every year during these months, district medical and health services perform the cyclone drill.

In the post-disaster event, it was specified that "The district Medical and Health Officer deploy teams with required drugs and vaccines to the affected areas to organize mass vaccination and distribution of vitamins etc. to the affected people. In municipal towns, this should be attended to, by the municipality. Municipality should make arrangements to make ready a panel of locally available trained vaccinators along with kits. The programme of chlorination of wells should also be taken up. The DM & HO should list out Government and private doctors, who can be called for emergency. Adequate number of ambulances should be made available. In their absence, some of the vehicles shall be converted into temporary ambulances."  
(GOAP, 1991:22)

On the recommendations of different committees, the department of medical and health developed their own contingency model plan of action in the event of a disaster. Different roles were assigned to medical officers and paramedical staff. In the model plan, 13 mandals out of the 57 were identified as cyclone risk zones in the Guntur district; under which 525 villages with a population of 6,49,980 should be taken care. Under this, Tenali revenue division is divided into four cyclone sub-divisions with a programme officer in-charge to carry out cyclone relief measures. These four centres are the main sub-stores for stocking drugs, equipment and disinfectants.



The Programme Officer will act as a link between the Mandal and the District headquarters and will exchange information from both sides. Both at the District headquarters and sub divisional level, one medical team consisting of medical officer, Health inspector, Health assistant, Attender with sufficient cyclone drugs and other requirements is kept ready for emergencies. Every day, the district medical and Health officer will review the situation in the morning between 10.00 AM to 11.00 AM at District headquarters. In the afternoon he will go to the affected villages for reviewing the situation in the field (GOAP : 1990 : 5-4).

#### ROLE OF HEALTH MAN POWER

On 7th may, 1991, a communique was sent to all the Medical officers of the PHC's by D M & H O regarding the cyclone threat. A cyclone monitoring cell was formed both at the district and state level. At the PHC level, the Nizampatnam Medical Officer issued a circular to the staff of PHC to urgently report at the headquarters. He advised them to take the following measures in the villages.

1. Chlorination of water sources.
2. Surveillance of diseases.
3. Treatment of minor ailments.
4. Disinfection of villages.
5. Reporting epidemic outbreak to the M.O.

and this was signed by all the staff. But none of the staff followed these measures.

He further sent a request to the Repalle Government Hospital for essential drugs and one more circular to the Mandal Revenue Officer to furnish the details of setting up of relief camps by which he could ensure chlorination of drinking water sources and disinfection of the area. With the information from MRD he started visiting all the relief camps. Prior to the cyclone he divided the staff into 9 para Medical teams which would serve the population ranging from 4 to 6 thousand. Immediately after the cyclone he converted it into eleven teams, each comprising of MPHs, CHWs, and MPWs, with the same responsibilities. One Medical Team was set up at Primary Health Centre. (M.O. 1990).

DM & HO in a wide circular RC. No. SPI/cyclone/DM&HO/90, on 8/11/89 deputed Medical Officers, and directed Medical Staff to stay at the headquarters. But staff members violated the orders and stayed away from the headquarters. No action was taken, although concerned Medical Officers reported the violations.

In an another incident on 11.05.90, DM & HO gave instructions regarding the supply of sterilization units to each team. But such things were not given. He also asked to report and verify the cause of death, but in practice medical officer's role was marginalised and the revenue officials took the verifications. As per the report of MRD submitted to the Collector, out of 42 cyclone shelters, 40 were not habitable and needed repairs.

The Medical Officer advised the executive officer of Nizamapatnam Panchyat to impose a ban on certain items like meat, fish, etc. as there were many case of dysentery.

The Medical Officer directed the Health Supervisor to take samples from small hotels and shops. The Health Supervisor directed his subordinate to collect money from shop and hotel owners when they found guilty.

Inoculation was given top priority and targets were set to complete them within three days. Medical Officers were directed to take up disinfection of carcasses, or if necessary to remove the carcasses with the help of revenue officials of animal husbandaries and local authorities in their village.

The circulars were issued after heavy criticism from the press and complaints from the people. In every cyclone, the disposal of the dead became a matter of controversy among different departments. There were no clear directives in the cyclone model plan nor from the collector regarding this important activity. In an interview with medical officers, it was found that from the beginning itself there was no proper coordination between medical officers and the Mandal Revenue Officials. MRO was mostly busy with relief distribution and protected the interests of revenue staff. The needs of medical teams were overlooked so they felt that finance should be organised by DM & HO and fuel for jeeps must be supplied from

their own channel. Medical officers complained that DM & HO should have made on the spot checking in the highly affected areas. Instead, according to M.O's, DM & HO stayed in the district Headquarters only. High officials had shown interest in the reports than in the relief work. They felt that the reporting system needs changes, because it is time consuming. They felt that distribution of 'Walkie-Talkies' would serve the purpose.

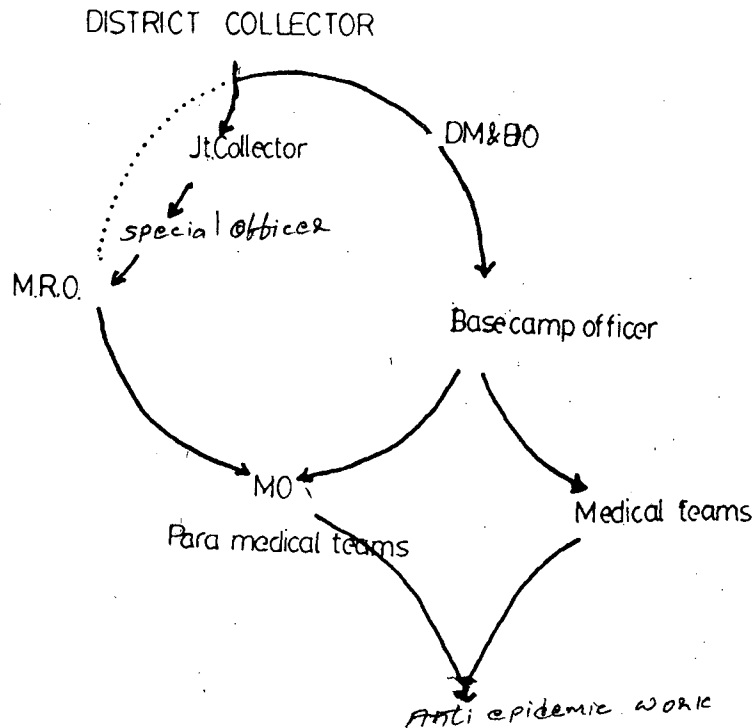
Due to non-standardised procedures mentioned for chlorination, people protested against chlorination. In a meeting attended by Health Supervisors, when DM & HO asked the procedures adopted in chlorination, many supervisors were unable to answer. This was revealed by a Health Supervisor of Nizampatnam PHC who himself did not know the procedure.

Medical Officers felt that reporting of discussion was not done properly and adequate reporting forms were not available. In the decision making process, generally the DM & HO take the decisions, which they should obey and implement. They felt that they must be taken into confidence, while the staff below medical officers in an interview felt that they should obey and implement the orders from medical officers. Instead they must be taken into confidence at least in regard to some of the issues that have vital importance.

## ORGANISATION

Such a serious recurrent human tragedy requires the emergence of a new organisational structure in the area in order to meet the challenges posed by cyclone, and the flow of information from top to bottom. However, instead of coordinated activity, in many cases inter-organisational rivalry and complaints against each other is rampant. Except for functional aspects, there is no cooperation between Medical Officers and the Mandal Revenue Officer.

The present organizational structure is shown in the figure



During Medical relief, it was observed that most of the time was spent on finding food for external medical teams. It was advised to open kitchens for every five or six villages. Most of the baseline relief workers complained that there should be one assistant to carry equipment to the affected villages.

## DEATH AND RELIEF

If we can analyze the death toll that has been on the increase during different cyclones, it will show the loopholes in the relief process. 'The Hindu' reported that the death toll in cyclone hit areas is as below :

- On May 10<sup>th</sup> (13), 11<sup>th</sup> (65), 12<sup>th</sup> (236), 14<sup>th</sup> (446), 15<sup>th</sup> (510), 16<sup>th</sup> (593), 17<sup>th</sup> (659), 18<sup>th</sup> (688), 21<sup>st</sup> (817).

In Guntur district the highest toll of 341 was reported. Amongst this, coastal Tenali division reported 229 deaths followed by Guntur division, 85, and inner Narasaraopet division, 27. This shows the impact of the cyclone on different divisions in this district and was shown in the Map (4.2). An attempt was made to analyze the death toll by taking 7 coastal mandals into consideration. Deaths among age groups in Table (4.1)

Fig. 4.2

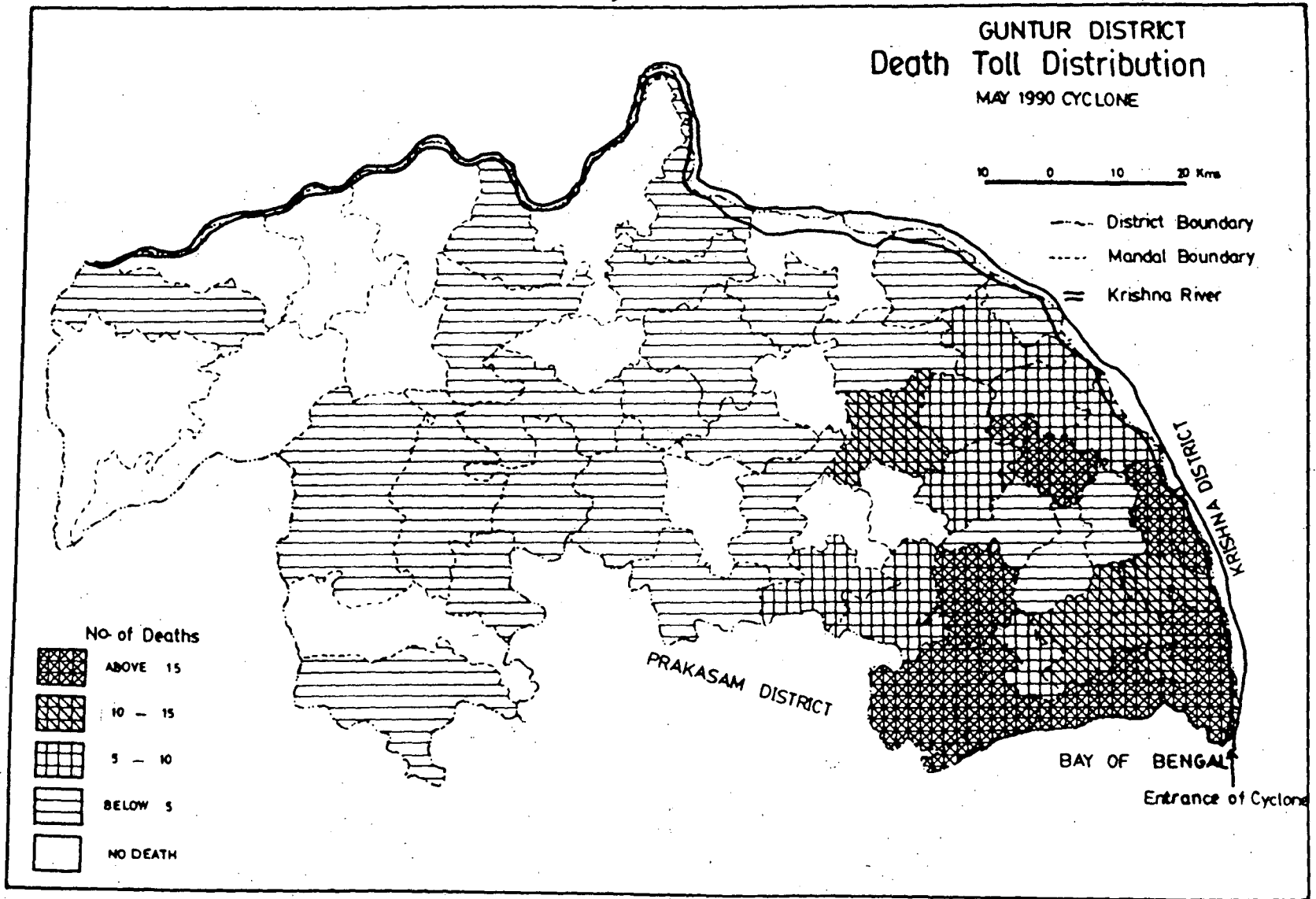


Table : 4.1Age wise Death toll

SNO	Age	Toll
1	1 - 10	5
2	10 - 20	6
3	20 - 30	5
4	30 - 40	8
5	40 - 50	6
6	50 - 60	20
7	60 - 70	42
8	70 - 80	18
9	80 - 90	7
10	90 - 100	1
11	Not Known	1
Total		

It is significant that most of the Deaths are in the age group of 50 to 80 years.

Table : 4.2

Caste wise Death Toll	
Forward Caste	18
Backward Caste	44
Scheduled Caste	10
Scheduled Tribe	6
Not Available	43

Source : Compiled from death reports available at the collectorate Guntur District.

In many cases, false deaths were reported because there was no standard procedure to verify the deaths. Due to this, it becomes very easy for those who had potential backing and money power to register non-eligible names. Except in very few cases, people who belonged to lower socio-economic groups, though they lost their members, could not get any assistance. The village Sarpanch or Village assistant was a part of the verification



procedure. People who died within a week during the pre-cyclone period and post-cyclone period, due to causes other than cyclone were reported as cyclone deaths. The Mandal Revenue Officer in an interview expressed his apprehension regarding the relief mechanisms. He said that it is not possible to conduct postmortem but there is a need to evolve proper procedure to find out the cause of death.

## Chapter - V

### COMMUNITY RESPONSE TO DISASTER

In this chapter, an attempt was made to understand the responses of the people towards different aspects of cyclone disaster like warning, impact of cyclone on housing and agriculture, relief measure and accessibility and availability of health services. Adavuladivi village was selected for this purpose. In this village, interviews with people and case studies helped in cross checking the data collected through reports and other secondary sources. A quantitative study was also attempted. This limited study, it was hoped, would help in providing a first hand account of the different dimensions of cyclone.

#### THE VILLAGE

Adavuladivi village, is situated in Nizampatnam mandal of Guntur district, is 7-8 Kms away from the sea coast. The population of this village as per 1981 census was 7394 with 1824 households. In the 1991 census it increased to 8985 with 1999 households. Adavuladivi and its surrounding hamlets are interior villages except Chandramouli Nagar and Gunnamtippa hamlets. The main village is linked with the main road, while all the other hamlets are connected by metal roads except Gunnamtippa and

Chandramouli Nagar hamlets.

In terms of location and communication, Adavuladivi and its hamlets are more or less similar to the 2482 villages situated along the 1030 Km coastline of Andhra Pradesh. The details are shown in Table (5.1).

Table : 5.1

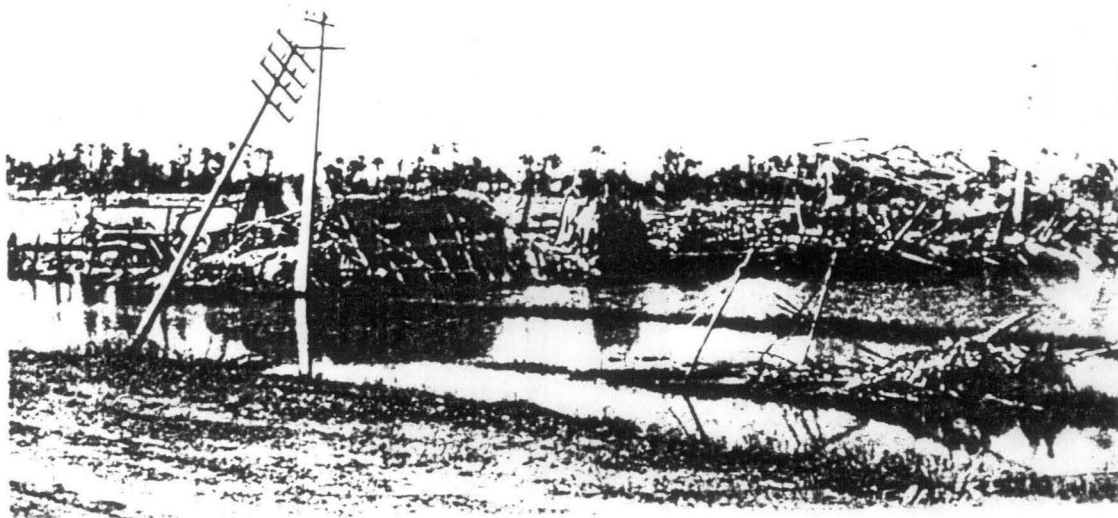
Distribution of villages along Coastal Line

Distance from the Sea	Number of Villages	Population (in Lakhs)	No. of Households (in Lakhs)
5 Kms	500	11.63	2.56
5 to 10 Kms	601	15.19	3.35
10 to 20 Kms	1381	27.68	6.10
Total	2482	54.50	12.01

Source : APSHCPL report

(As per 1971 census)

According to the survey of housing conditions in the 28<sup>th</sup> round of N.S.S. (October 1973-June 1974) 73.98% of the dwelling units in coastal Andhra are kutcha structures. The inhabitants belong to the economically weaker sections in terms of the HUDCO's criterion (APSHCPL Report; 1979 : 2). From this we can understand the economic conditions in these village. It is only in big villages and towns one can find pucca structures. A typical kutcha structure was affected by cyclone was shown in Fig (5.1).



A TYPICAL KUTCHA STRUCTURE AFFECTED BY CYCLONE ( 5.1 )



Most parts of the Delta region is served by canals for irrigation and drainage. These areas are particularly vulnerable to tidal waves. The thatched huts in which fisher folk and farmers live, generally blow off when exposed to severe cyclonic storms. Pucca buildings such as Panchayat, buildings schools, temples, churches or mosques and cyclone shelters if present generally provide shelter during cyclones.

Like most of the villages in the region, Adavuladivi and its hamlets are multi-caste villages. Majority of the house holds belong to the Gowda caste. The second numerically strong caste is Kapu followed by Agnikula Kshatriya (fisherman). Harijans Muslims, Washerman, Yanadi, Erukala, Brahmin, Reddy and Vysya. Most of the hamlets are distinctive with a homogeneous group of castes except the main village where all the castes are living together. The primary occupation of the people in these villages is agriculture and fish farming. Toddy selling is an important secondary occupation for the Gowda community.

A primary survey was conducted in the village by taking a simple of random sample of 5% of the 1999 householders. This survey gives the following socio-economic profile. Among the respondents 62 were Male and 38 were Female. Among the respondents, there were 23 literates. The mean year of schooling was 4.5. The respondents, 87 were Hindus 7 were Christians and 6 were Muslims. Among the respondent families, 12 were Joint families and 72 were nuclear.

**OCCUPATION**

Occupational break up of the sample is represented in the Table (5.2).

**Table : 5.2****Occupational Breakup of the Sample**

Sl No	Occupation	No of Respondents
1.	Farming (Owner + Tenants)	43
2.	Agricultural labour	23
3.	Fishermen	7
4.	Trade and Commerce	4
5.	Employees	1
6.	Artisan	8
7.	Labourers	2
8.	Traditional Services	4
9.	Others	8
	<b>Total</b>	<b>100</b>

Source : Survey Data

This table reveals that a large section of respondents are dependent on agricultural activities followed by fishing, while some are artisans. In the post-disaster days, employment on land was reduced to a minimal extent due to sand casting in the agricultural lands. Due to inundation of sea water, which in turn decreased the productivity of land, finally caused unemployment to those dependent on land. This is one reason why farmers in this region turn their lands to fish farms. The majority of the villagers are original inhabitants of the

village. Among those who migrated from other coastal villages within the last 10 years involved in business or in fish farm activities.

### WARNING - RESPONSE

Warning process is an important aspect of disaster preparedness. Its credibility, timing, completeness, specificity and effectiveness determine the range of short run precautionary measures initiated by the victims.

The Table (5.2) represents the possible source of information regarding cyclone.

**Table : 5.2**  
**Media of Information**

Sl No	Media of Communication	No of Respondents
1.	Radio Messages	79
2.	News Paper	0
3.	Village Head/Tom Tom/Tamuku	4
4.	Traditional Forecasting	6
5.	Other Sources	4
6.	Non-Respondents	7
	Total	100

Source : Survey Data

This indicates that possible source of information is the radio, followed by traditional forecast and village servants.

Governmental sources claimed that the dissemination of precautionary measures to be followed which had been given through posters, radio, television, police and through local Governments had helped the victims considerably. In contrast to their argument, it was found that only 46 respondents received information; 34 got it through popular media like radio 5 respondents got it through Government servants and four heard it from the village Sarpanch.

Based on the above information received by the respondents, 55 initiated action by taking different kinds of precautionary measures as show in the Table (5.3).

**Table : 5.3**  
**Response to Warning**

S1 No	Response Category	No of Respondents
1.	Moving to Pucca House	32
2.	Moving to Temple/Church/School	10
3.	Moving to Cyclone Shelter by Govt.	4
4.	Safety measures to house	4
5.	Storing essential goods	1
6.	Others	4
	Total	55

Source : Survey Data

The Government claimed that the low death rate was due to evacuation of villagers from low lying areas. But according to villagers, height and intensity of the tidal wave was less



compared to earlier cyclones which saved their lives. For this village two lorries were sent for evacuation on the day of disaster. Both were parked in front of the Panchayat office but no one used them.

### HOUSING

As discussed earlier, majority of the villagers live in kutcha houses. Among the sample drawn 80 respondents lived in huts built by mud, 3 respondents lived in pucca house, 11 occupied brick-walled huts and 6 respondents belonged to Government pucca housing as shown in the Table (5.4).

Table : 5.4

#### Housing Conditions

Sl No	Type of House	No of Respondents
1.	Hut	18
2.	Hut built on Mud walls	62
3.	Brick walled pucca house	3
4.	Brick walled hut	11
5.	Asbestos roofed house	0
6.	Two Storeyed building	0
7.	Govt built pucca housing	6
8.	Nao Built pucca housing	0
9.	Others	0
	Total	100

Source : Survey Data

In the post disaster housing pattern, 88 respondents lived in their original houses, whereas 12 shifted to other houses or built new ones. 88 repaired their houses and these repairs ranged from covering the roof-top to reinforcement of houses. This is shown in the Table (5.5).

**Table : 5.5**  
**Repair Rendered to Houses**

Sl No	Type of Repair	No of Respondents
1.	Roof covered with palm leaves	79
2.	Ordinary repairs	6
3.	Floor of house repaired	2
4.	Walls re-built/repared	59
5.	General reinforcement	1
6.	Don't know	0
	Total	147

Source : Survey Data

Most of the respondents undertook multiple repairs, people were still undertaking repairs at the time of field study. It was observed that in many cases the plinth area of new houses constructed over collapsed huts was smaller than earlier ones due to lack of resources. Most of the villagers took shelter under trees during the post-disaster days for months together. Many villagers living in pucca houses built for weaker sections expressed the fear that these houses may collapse in the event of future disasters.

### CYCLONE SHELTER

The village has 5 cyclone shelters, 2 in the main village and 3 in other hamlets, but only 50 respondents responded that they have cyclone shelters in the village. This is primarily because villagers who live in the hamlets feel distinct from the main village. When respondents are asked to comment on the state of cyclone shelter, 33 said that it's in a dilapidated condition, 14 felt that the place is not sufficient and 3 felt that there are no doors and windows. All the cyclone shelters are poorly maintained and water, electricity and sanitation is not available. In a note to the Collector, the MRD of Nizampatnam stated that out of 42 cyclone shelters in his jurisdiction, 40 shelters need immediate repair and they are no more useful for habitation. Among the five cyclone shelters in the village, the one built by voluntary organisation is occupied by the police, while another two are used as school buildings.

### AGRICULTURE AND ALLIED ACTIVITIES

As we discussed earlier majority of the population are employed in agricultural activities. Among the respondents 52 own land ranging from 0.5 to 7 acres. The former village head, who is a Brahmin, owned 1252 acres of land in the village, but to escape from land ceiling he had registered them on benami. Among other land lords, one is involved in business and money lending and another is a Registered Medical Practitioner (RMP) who migrated to the village.

The losses suffered by the villagers due to cyclone with regard to agricultural components is given in Table (5.6).

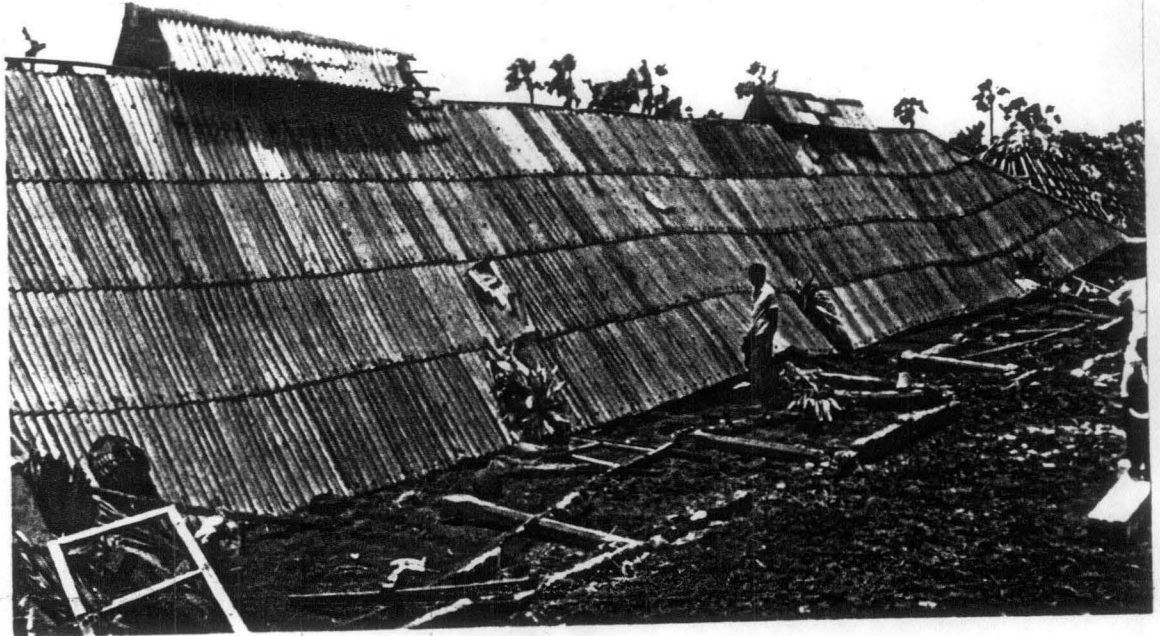
Table : 5.6  
Losses due to Cyclone

Sl No	Types of Losses	No of Respondents
1.	Crop Loss	22
2.	Cattle and other domestic Animal	39
3.	Domestic Birds	69
4.	Vegetable Garden	1
5.	Electric Pumpset	1
6.	Fish farm	13
	Total	145

Source : Survey Data

Though most of the respondents were dependent on agriculture, the losses occurring to the crops were minimised, as crops were sold to businessmen at the time of disaster. But there was a heavy losses to poultry and cattle farms as most of the people depend on these for subsidiary income. Destruction of poultry farm and garden was shown in Fig (5.2).

Dependence of the farmers and tenants on the Money lenders is a common phenomenon as most of the farmers are economically weak to invest on their own. In our sample, the majority of the respondents have borrowed money from the money lender and dependence on commercial banks and cooperative societies is very less and is confined to rich farmers only.



A DAMAGED POULTRY FARM AND A GARDEN ( 5.2 )



## INSURANCE

In the recent past Governments decided to give insurance coverage to people and crops against natural disasters. Although this is gaining momentum in the urban areas the awareness at the village level presents a different picture. Insurance companies restricted their coverage to big towns and cities, as they claim that it is not profitable for them to go to villages.

Two respondents in the sample got themselves insured. In these two cases, they didn't get insurance claims as they lost their insurance papers in the cyclone. 19 respondents said that they may insure their belongings in future if it is beneficial. The order of priority for insurance is fish-farm, cattle, sheep and house.

## RELIEF

In the event of any disaster immediate relief would help a lot of victims to come out of the shock and to resume their daily activities. In this cyclone, 13 respondents received food grains from the sarpanch and Government officials within 48 hours. Most of these respondents are from the main village where the sarpanch also lives, where as people from hamlets and distant places were deprived of same within this time period.

Long term relief was given later 87 respondents got relief from Government while 13 were not given any relief due to various

reasons. The Table (5.7) gives the pattern of relief.

Table : 5.7

Patterns of Relief

Sl No	Kind of Relief	No of Respondents
1.	Relief for house @ Rs 500/-	47
2.	Relief for house @ Rs 700/-	1
3.	Relief for house @ Rs 200/- to Rs 250/-	35
4.	Rice	2
5.	Rice, Clothes, Utensils etc.	73
6.	Rice, Clothes and House Relief	7
7.	Housing Material and Farm equipment	0
8.	Loans, Subsidies	0
9.	Medical Aid	0
10.	Others	0
	Total	165

Source : Survey Data

House relief was divided into three types based on the extent of damage. Villagers accused that the Government provided less amounts to the villagers, while people in towns were given more.

Enumeration of the affected people was done immediately after the cyclone. Later, Government asked the revenue officials to verify as the discrepancies were found in the first enumeration list. A second list was thus prepared, which

according to the villagers omitted many of their names. The criteria for inclusion of names in the list was also not sound. One was possession of ration cards which many lost during cyclone. Panchyat tax-register was another criteria. Since many villagers stayed outside the administrative boundary of the village, many who were exposed to cyclone could not get any relief. This caused much resentment among villagers and they gheraoed the MRO many a times. Fig (5.3) shows the agitating villagers at MRO Office.





AGETATING VILLAGERS AT MRO OFFICE ( 5.3 )

Villagers said that the Mandal Revenue Officer (MRO) got the 'Best performance award' not for his excellent relief activity but because he returned relief money worth Rs 18 lakhs of rupees back to the Government. Many articles which are supposed to be distributed among villagers were still lying in MRO's office in Nizampatnam. Another complaint was, officials from Rayalaseema and Telangana, who did not have any prior experience in relief activities were deputed to this place.

Among the sample, 80 respondents remember that they were given relief promptly in the previous cyclone, 5 said that they don't remember. Many felt that distribution of aid was delayed. Some felt that Government machinery worked very slow.

#### CORRUPTION.

The respondents were asked to comment on different kinds of corruption which they had experienced. 27 respondents felt that relief was given to the unaffected. Some said that the relief money was cornered by the sarpanch and Government officials; 10 respondents said that more relief money was given to the Sarpanch's own caste members. There were also complaints that the village sarpanch collected Rs 100/- each from villagers in order to provide lodging and boarding to the Tata company officials who surveyed the village for pucca housing construction. In an another incident, the Forest Ranger filed cases against the villagers for collecting small logs of wood for repairing their own houses destroyed during the cyclone.

### LONG TERM REHABILITATION

Long-term rehabilitation assumes importance in these areas that are threatened by frequent disasters. Majority of the respondents felt that pucca housing will help in preventing their dislocation. 20 respondents felt that other activities like building roads irrigation canals etc. would improve the economic conditions of the community, while some felt that construction of cyclone shelters in every hamlet would be of much help.

### ROLE OF VOLUNTARY ORGANISATION

During the post-disaster days, one voluntary organisation came and distributed clothes and rice. The Church Mission distributed relief among harijans. A few other national voluntary organisations surveyed the area and asked the people to contribute partially for pucca house schemes. The local youth association cleared the drainage a few days after the cyclone. Except these, there were no substantial voluntary efforts in the village. Among the sample drawn, 48 respondents stated that they received relief from voluntary organisations. Majority among them received rice and clothes. A few received assistance for clearing of canals, drainage and for reconstructing irrigation canals.

**HEALTH SERVICES**

Accessibility and availability of health services under normal condition will give in-sight into how it can work in crisis situations. 90 respondents said that they will visit private practitioners in the event of illness. Six said that they will visit the community health worker. The pattern of responses is given in the Table (5.8).

**Table : 5.8**  
**PHC Usage Pattern**

Sl No	Occasions	No of Respondents
1.	Emergency Situations	11
2.	Maternal and Child diseases	20
3.	Serious illness	7
4.	Do not visit PHC	62
	Total	100

Source : Survey Data

The reasons for not visiting the PHC are given in Table (5.9).

**Table : 5.9**  
**Reasons for not Visiting PHCs**

Sl No	Reasons	No of Respondents
1.	Financial Problems	74
2.	Social Problems	1
3.	PHC staff indifferent	10
4.	No medicines	15
	Total	100

Source : Survey Data

In order to visit the PHC they have to forego their daily wage because the PHC is situated 35 Kms away from the village. This visit will incur an expenditure of Rs 20 towards transport

and lunch. They said that the only health worker who makes home visits is the malaria worker, while the PHC was visualised more as a family planning centre.

#### DRINKING WATER

The chief source of drinking water is well, followed by handpumps. A few get water from the drinking water plant, who are mostly from the main village where such a protected water system is functioning. According to villagers, water in the wells become salty when the level of water in the irrigation canal goes down.

Among the respondents, majority do not have any facility for sanitation. They go to the fields for defecation. No health personnel visited the village before the cyclone and neither did they advise them about precautionary measures.

Among the respondents, 45 suffered from various diseases that is shown in the Table (5.10) and out of 5 deaths recorded in the village, 4 were due to collapse of rice mill, which is shown in Fig (5.4).



DEATHS DUE TO COLLAPSE OF A RICE MILL ( 5.4 )



Table : 5.10Incidence of Diseases due to Cyclone

Sl No	Diseases	No of Respondents
1.	Deaths	4
2.	Injured	8
3.	Fever	33
4.	Diarrhoea	28
5.	Insect Bite	0
6.	Skin/Eye problems	1
7.	Drowning	0
8.	Mental Health problems	9
	Total	83

Source : Survey Data

At the time of the field study half the population was suffering from scabies. This was later verified by the Medical Officer, PHC, Nizampatnam. Majority of the out patients in the PHC had come for treatment of scabies. However, outbreak of epidemics was naturally prevented by the inundation of the land by salt water, although carcasses were buried only after one month.

Sixty respondents said that they received medical attention from medical teams. Most of them received medical attention from the medical and health department. A few went to private doctors, who denied treatment due to inability of villagers to



pay money.

Local panchayats initially refused to buy bleaching powder from their own funds, and there was inter-organisational rivalry among the health and Panchayat officials regarding the work of disinfection and carcasses removal. Later state Government through animal husbandry made arrangements to remove carcasses. Extra funds were allotted to panchayats for purchasing bleaching powder. This work was mostly done in the main village and in the surrounding parts of the panchayat office, while the hamlets were deprived of these activities. After waiting for one month, the villagers themselves undertook this work.

We report here, three case reports for highlighting the different aspects of the cyclones, the hardships, people have had to go through, the death of their kith and kin and the life situation after the cyclone.

#### CASE REPORT - I

(Village - Adavuladivi, Case of B.B, female, Age : 12, Occupation : Servant Maid, Caste : Gowda)

"I am working as a maid servant at the doctor's house. A few years back, my family migrated to this village due to politically motivated murders in my native village, Kothapalem. Prior to the cyclone, one landlord offered me work in his mango

garden, which is 2 Km away from the village. On the fateful day, there was only a drizzle in the morning. By afternoon black clouds gathered all over the sky. I was sitting in the garden with other 5 fellow workers, when rain started pouring along with high-speed wind and gales. Around 3 O'clock, the small hut in which we took shelter collapsed. An old woman, who was searching for her lost cattle had also joined us. We climbed to the top of a small sand dune, where, we felt safe. The water started gushing in and enveloped our sand dune. The sand dune started eroding due to this. Then we had to move to a nearby tank bund by crawling on the ground. The wind speed was so fast that we had to lie down on the tank bund. Mud was going into our ears, eyes and sometimes nostrils, one of us fell unconscious. Next day, we were lucky that we saw the sun rise, we found only water around us. We walked along the tank bund to the next village Kuchinapudi and took shelter in a pucca house. It was already packed with villagers. The house-owner offered some food at noon. When we realized that the old woman was not with us, we started searching for her with the help of other villagers. We could find only her dead body in the mango garden, the next day. When I reached Adavuladivi, my family members frantically searching for me. I did not recognize my village, it was totally ruined; carcasses were floating, all around. People lost every thing including their family members. They were crying".

CASE REPORT - II

(Village :- Adavuladivi, Case of V.V, female, Age : 25,  
Occupation : House Wife, Caste : Vysya)

"I belonged to a joint family before the cyclone. My husband worked as a rice seller in the nearby town. A few days before the cyclone, harvested grain was transported to a nearby mill for polishing. On the day of cyclone, around 2 P.M., the heavy down pour started. My husband told me that he will go and make proper arrangements to protect the grains stored in the rice mill. He also took his brother with him. They never returned. Till late night, we searched for them everywhere in the rain and flood water.

Next morning, some people told us that they had seen them going towards the rice mill. Then we all proceeded towards the rice mill, where, we found four dead bodies lying under the rubbles of the collapsed rice mill. One of the dead body was my husband's. His brother and two labourer from the same village also died. After some days Government gave us ex-gratia of Rs 5000/- each. After my husbands death, I am now staying in a separate house. I was forced to leave my husband's house. Both my children are still young. I have to do some work for subsistence. I do not know what will be my future".

CASE REPORT - III

(Village - Adavuladivi, Case of V.A, female, Age : 60, Occupation : House Wife, Caste : Gowda)

"We were not aware of the cyclone as we did not receive any cyclone warning. When the rain started, I observed a few neighbours moving towards the police station for shelter along with paddy bags. When the roof of the hut started blowing off, I tried to reach the police station along with my old husband and my handicapped son. Two of my sons were not at home. They had gone to work in a neighbouring village as we don't get employment in this village except for three months. By the time, we reached the police station, it was packed. Children were crying for food, there was a foul smell all around. The flood water entered into the shelter. We all started throwing out water with utensils. Although the police station was located in the highest point of the village, there was water three feet high water inside the police station. Next morning, when we came out, I could not find my hut. It had been washed away. We stayed in the police station for one and a half months. We had to cook our food outside the building. After being vacated from the police station forcibly by police, we had to live under the trees, till we re-built our own hut. No one helped us because every one was facing the same problem. The Government gave us some rice, clothes and Rs 500/- for rebuilding the hut. I am wearing the same saree since then, as I am unable to buy the clothes. This year labourers did not get employment as agricultural land was

inundated by salt water and covered by sand. Even for drinking water, we have to go far; As I cannot do this work, we are using salt water from a nearby well. The police station saved our lives. But the problem now is how to live without work. We are living dead and may be worse than the dead."

## Chapter - VI

### DISCUSSION AND CONCLUSION

The nature and effects of natural calamities differ in different societies depending upon the prevailing geographical political and economic conditions. In an under developed country like India, the unfavourable conditions exacerbate the ill effects of natural calamities. The victims are often the poor and the economically weaker sections of the society. The extent of disaster can not be measured on any scale, which span across all the dimensions of human life. However, the estimated losses due to cyclones covering a few dimensions itself indicate the enormity of the problem. The total loss due to cyclone and floods in India from 1953 to 1984 is estimated to be Rs 15,406 crores.

In Andhra Pradesh alone, the losses due to cyclone are greater than the annual plan expenditure. The percentage of total estimate loss due to cyclones over the plan expenditure during different plan periods varies between a minimum of 20.68% to a maximum of 150.99% and was given in Table (6.1).

Table : 6.1Losses Due to Severe Cyclones under Five Year Plans  
in Andhra Pradesh

Period	Total Plan Expenditure	Total Loss due to Severe Cyclones	Column (2) as a Percentage of the Column (2)
(1)	(2)	(3)	(4)
I Plan	96.78	Nil	Nil
II Plan	188.60	Nil	Nil
III Plan	352.42	Nil	Nil
Annual Plans 1966-67 to 1968-69	234.06	Nil	Nil
IV Plan	448.87	200.00	44.55
V Plan	1410.55	1225.65	86.84
Annual Plan 1978-79	451.00	681.00	150.99
VI Plan	4100.00	847.96	20.68
	7282.28	2953.96	040.56

Source : GOAP, Hand book of statistics, AP, 1983-84 Bureau of Economics and Statistics, Hyderabad, 1985. GOAP, Sixth five Year Plan, 1980-85, Draft Vol III, Finance and Planning Department, Hyderabad, 1980.

During ancient, and medieval periods the Monarch was solely responsible for the relief measures at the time of disasters. There were instances when the whole kingdom shifted to safer places for sustenance. The rulers maintained stores of grain at their capital. In the absence of adequate transport facilities, they could only feed the starving in the capital city, where they congregated. Even during the colonial period, when the British

Government took the responsibility of providing relief, it was confined mostly to urban centres. People flocked to cities in search of food and work. Such centralized relief measures also encouraged migration.

The sufferings of the people have not changed qualitatively over the different periods in the history. It is same section of the society, which is suffered due to their unfavourable conditions. When during the cyclone, the prices of food material are pushed up, employment becomes meagre, houses are washed-off by flood waters, the already poor became the victims. Landless labourers and village artisans are thrown out of their work. Under such conditions, landlords and business class make huge profits by selling the hoarded materials at high prices. Public distress becomes the source of their capital.

Although, disasters are viewed, atleast on paper, in social and economic terms, the predominant approach for mitigating problems due to disasters is based on charity orientations, rather than on changing social conditions, which encourage dependence on the state. As seen in this study, most of the relief measures were ad-hoc in nature, which violated the elaborate reports and action plans prepared by centre and state Governments and other agencies. The needy sections are kept outside the ambit of such programmes. Even during the rehabilitation phase, there was much delay in implementing different programmes, which resulted in extending the sufferings of the peoples.



The field work conducted in Adavuladivi village has shown that the only pucca structures, which provided shelter to villagers in the event of disaster were temple, school building, police station and Panchayat Building. Although, one could find a few cyclone shelters in the area, most of them were not habitable. Evacuation of people during cyclones were also neglected. People had to depend on their own physical and economic resources in shifting to safer places. Warning process is another area which needs attention. Although many heard about the impending disaster through radio, information regarding precautionary measures were not well disseminated. Disaster preparedness drills were reduced to a mere ritual and exist only on paper.

Regarding health measures, it was found that the Primary Health Centres had a minimal role in the entire episode. Victim blaming attitude, inter-organisational rivalry and lack of training in disaster management were the major bottlenecks for providing effective health care to the victims. The quality of services provided by the PHC even during normal periods was such that people had to depend on other sources for their needs.

It was found that health staff with prior experience would be able to provide better services during cyclones. In many cases, people without any experience were deputed for relief work. This indicates the need for training of health workers in disaster management, especially in the vulnerable areas.

Removal of carcasses and dead-bodies is another area, where lot of controversies arose. There was confusion between different Government departments regarding this important activity, which help in averting epidemics. Verification of death was an activity, which had several lacunae. The PHC was not involved in verifying the cause of death. There was no standard procedure and as a result many fake deaths were reported.

This study tries, in a modest way, to fill the gap of sociologically oriented studies on disasters. The impact of disasters and the relief-rehabilitation measures undertaken cannot exist in a socio-political vacuum. Even technologically dependent cyclone relief measures starting from warning process to chlorination of wells have important socio-political underpinnings which needed to be carefully studied. The efforts to mitigate the problems of people should also cover the economy of the area. Such as rejuvenation of agricultural sector, provision of employment, changing of cropping pattern according to on-set of disasters etc. The mitigative effort should be combined with long-term developmental activities. Any cyclone relief policy and procedures should be based on such a long term understanding rather than ritually following an age old famine policy, which tend to be based on short term ad-hoc and charity measures.

Appendix

Center of Social Medicine & Community Health.

Jawaharlal Nehru University.

NEW DELHI.

(Natural Disasters and Health.)

\* Schedule No :

Date :

- (1) District :                      Mandal :                      Village :
- (2) Name of respondent.
- (3) Caste.                              SC/ST/BC/OC.
- (3a) Religion : HINDU/MUSLIM/CHRISTIAN/OTHERS.
- (4) Type of Family : a) Joint    b) Nucleus.
- (5) Particulars of family.

Name	Age	Male/Female	Relation to Respondent (R R)	Education	Occupation

(6) Occupation.

- a) Farming (Owner and Tenant).
- b) Agricultural labour (farm and non farm).
- c) Fishing.
- d) Trade and commerce.
- e) Employee.
- f) Artisan.
- g) Labourer.
- h) Traditional services.
- i) Others.

(7) How long have you been staying in the village.

- a) Inhabitant of the village for long.
- b) Migrated within the last ten years.

(8) How did you receive cyclone warning ?

- a) Radio Message.
- b) News papers.
- c) Village Head/ Tamuku/ Tom Tom.
- d) Traditional forecast.
- e) Others.

(8a) Did the warning help you ?

- a) Very much.
- b) To some extent.
- c) I do not know.
- d) Not at all.

(9) Did you receive any precautionary message from governments?

- a) Yes.
- b) No.
- c) Don't Know.

(9a) If yes from where did you receive the precautionary message ?

- a) Pamphlets.
- b) Posters.
- c) Radio.
- d) Govt. Servants.
- e) Police.
- f) Village servants.
- g) Village sarpanch.
- h) Others.

(10) Have you taken any Precautionary measure .

- a) Yes.
- b) No.

(10a) If yes explain.

- a) Moving to pucca house.
- b) Moving to Temple/church/school/building.
- c) Moving to cyclone shelter.
- d) Safe guarding House.
- e) Storing essential goods.
- f) I will move to safer place.
- g) Others.

(11a) Type of House.

- a) Hut.
- b) Hut built on mud walls.
- c) Brick walled pucca house.
- d) Brick walled Hut.
- e) Asbestos roof house.
- f) Two storied building.
- g) Government pucca house.
- h) NGO built pucca house.

i) Other.

(12) After cyclone did you stay in the SAME house .

a) Yes.            b) No.

(13) After cyclone did you repair your house ?

a) Yes.            b) No.    c) Don't know.

(13a) If yes how.

a) Roof covered with palm leaves.

b) Ordinary repairs.

c) Floor raised.

d) Walls rebuilt/ repaired.

e) General reinforcement.

f) Don't know.

(14) If there existed a cyclone shelter in your village, did it help you ?

a) Yes.            b) No.    c) Don't know.

(14a) What do you think about the shelter.

a) Not sufficient.

b) No water.

c) Ruined stage.

d) No doors and windows.

e) Other.

f) Don't know.

(15) Do you own agricultural land ?

a) Yes.            b) No.

(15a) If yes, the type ? and how much ?

a) Dry.            b) Wet.

(16) What is the kind of damage.

- a) Crop loss.
- b) Cattle and domestic animals.
- c) Domestic Birds (Hen, Duck etc.).
- d) Vegetable Garden.
- e) Electric Motor.
- f) Fish farm.

(17) Do you borrow money quite often for agricultural purposes ?

- a) Yes.
- b) No.

(17a) If yes, form what source ?

- a) Commercial Banks.
- b) Cooperative societies.
- c) Government loans.
- d) Money lender.
- e) Others.
- f) Don't know.

(18) Do you insure your crops/assets ?

- a) Yes.
- b) No.

(18a) If Yes.

- a) When.
- d) Amount.

(18b) If no will you do it in future ?

- a) Yes.
- b) No.

(18c) If you plan to insure in future, what are the items likely to be ?

- a) House.
- b) Crop.
- c) Garden.

- d) Cattle.
- e) Sheep.
- f) Fish farm.
- g) Domestic Birds.
- h) Others

(19) Did you receive any payment for the things that you had insured.

- a) Yes.
- b) No.

(20) Did you receive any relief within 48 hrs. of the occurrence of the cyclone ?

- a) Yes.
- b) No.
- c) Don't remember.
- d) Don't know.

(20a) What was the source of relief ?

- a) Neighbours/ Relatives.
- b) Village Sarpanch.
- c) Fellow formers.
- d) Rich in village.
- e) Government officials.
- f) Non Government organisations.
- g) Village political leaders.
- h) Bank employees.
- i) None reserved.
- j) Others.

(20b) What made of relief it was ?

- a) Rescued.
- b) Moral support.
- c) Food.
- d) Shelter.
- e) Clothes.



- f) Medical Aid.
- g) Monetary help.
- h) Drinking water supply.
- i) Others.

(21) Did you receive any relief from the government ?

- a) Yes.
- b) No.
- c) Don't know.

(21a) What kind of relief ?

- a) Relief for House up to Rs. 500/-
- b) Relief for House up to Rs. 700/-
- c) Relief for House up to Rs. 200/- to Rs. 250/-
- d) Rice.
- e) Rice, clothes, Utensils etc.
- f) Rice, clothes & House Relief.
- g) Housing Material and Farm Equipment.
- h) Land Subsidies.
- i) Medical Aid.
- j) Others

(22) Did you receive any relief during the previous cyclones ?

- a) Yes.
- b) No.
- c) Don't Remember
- d) Don't know

(23) What do you think about Government relief work ?

- a) Government machinery worked very well.
- b) Government machinery worked satisfactorily.
- c) Government machinery worked slow.
- d) Delay in distribution of Aid.
- e) Don't know.

(24) Have you got any grievances against government relief machinery give detail.

- a) Relief given to unaffected.
- b) Lower level government officers corrupt.
- c) Village heads corner the Aid.
- d) All the government officials corrupt.
- e) Men.
- f) Others.

(25) What kind of rehabilitation works are most meaningful according to you ?

- a) Pucca house to whole community.
- b) Constructing community shelter.
- c) planting trees on coast line.
- d) Other.

(26) Any voluntary organisation helped you after cyclone ?

- a) Yes.
- b) No.
- c) Don't know.

(26a) If yes, what kind of service ?

- a) Rescued .
- b) Rice, Clothes.
- c) Carcasses removal.
- d) Mental health services/ moral/ support.
- e) Clearing trees and debris.
- f) Monetary help.
- g) Medical Aid.
- h) Drinking water.
- i) Pucca housing.
- j) Roads, wells, canals reconstruction.
- k) Farm equipment/ material.
- l) Community shelters construction etc.

- (27) What is your opinion about the services rendered by voluntary organisation.
- a) Very good.
  - b) Satisfactory.
  - c) Don't know.
  - d) Bad.
  - e) Very Bad.
- (28) In case of illness what will you do ?
- a) Visit community health worker.
  - b) Visit health worker.
  - c) Visit sub center/P.H.C.
  - d) Visit private doctor.
  - e) Visit quacks.
- (29) For what problems do you visit P.H.C. ?
- a) Emergency.
  - b) Mother and child diseases.
  - c) Serious illness.
  - d) No visit.
- (29a) If you do not visit P.H.C., what is the reason.
- a) Financial problems.
  - b) Socio problems.
  - c) Hope in P.H.C. are indifferent.
  - d) No medicines.
- (30) Did any health personnel visit you. ?
- a) Yes.
  - b) No.
- (30a) If yes who ?
- a) C.H.W.
  - b) C.H.V.

C) P.H.C. Doctor.

d) All the above.

(31) Source of your drinking water ?

a) Protected drinking water system.

b) Wells.

c) Hand pump.

d) Tanks/ canals.

e) Others.

(32) What was the source of drinking water after cyclone. ?

a) Water pockets.

b) Water tankers.

c) Normal available places.

(33) Do you used any method for purification of water ?

a) Yes.            b) No.

(33a) If yes, what method ?

a) Boil and filter.

b) Chlorination by mixing tablets.

c) Using chlorinated water only.

(33b) After cyclone, how often the water was chlorinated ?

a) Every day.

b) Two or three days period.

c) Once a week.

(34) Do you have a proper latrine in your house ?

a) Yes.            b) No.

(35) Did the health personnel visit you before the cyclone ?

a) Yes.            b) No.            c) Don't know.

(35a) If yes, did they suggest any precautionary measure ?

- a) Yes.
- b) No.

(36) Before cyclone did you take any health precautionary measure ?

- a) Yes.
- b) No.
- c) Don't know.

(37) Did your family suffer from any health problem after cyclone ?

- a) Yes.
- b) No.

(37a) If yes, what disease ?

- a) Died due to cyclone.
- b) Injured.
- c) Fever.
- d) Diarrhoea.
- e) Insect bite.
- f) Skin/ eye disease.
- g) Drowning.
- h) Mental health problems.

(38) Did you receive proper health service after cyclone ?

- a) Yes.
- b) No.
- c) Don't know.

(38a) If yes, from whom ?

- a) Medical and health department.
- b) Voluntary health agencies.
- c) Private individuals.
- d) None of these.

(39) Are you satisfied with the health services rendered government and other organisations. ?

- a) Yes.
- b) No.
- c) Not much.

(40) Did your panchayat take up any public health activity ?

- a) Yes.
- b) No.

(40a) If yes, what kind of service it was ?

- a) Clearing debris.
- b) Clearing drainage.
- c) Removing carcasses.
- d) Bleaching the surroundings.
- e) Others.

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