EPIDEMIOLOGICAL SURVEILLANCE REPORT ON JAPANESE ENCEPHALITIS IN NEPAL FOR THE YEAR 1996/97

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Preface & Acknowledgement

Japanese encephalitis (JE) is a serious acute mosquito-borne (Culicine mosquitoes) viral zoonotic disease and is endemic throughout most of the Far east, South Est Asia and South Asia including Nepal. The first indication of JE transmission in Nepal was from northern India (Bihar, Uttar Pradesh and West Bengal states) where an apparent Japanese encephalitis outbreak was reported for the first time. Outbreaks recurred exclusively in south India from 1948 until 1978.

The present study has revealed that the JE situation in Nepal from 1978 onward showed increasing trained in the incidence of JE from the human population point of view, coverage of geographical area, seasonal occurance, vector bionomics, animal reservoir hosts and environmental and climatic changing effects. Since it is a vector borne viral zoonotic disease so far Culicine mosquitoes species viz. *Culex tritaeniorhynchus, Cx. vishnui, Cx. pseudovishnui, Cx. gelidus and Cx. fuscocephala* have been incriminated and identified of vectors of JE. The female mosquitoes are known to feed on a side range of vertebrates including man. Where as some *Culicine* species have a restricted host range and distinct feeding preferences. JE is a viral zoonotic disease transmitted by mosquito vector bite and caused by arbovirus (flavivirus) which affects the central nervous system. The virus is maintained in nature in animals reservoirs like pigs, cattle and birds. This disease was first recognised in Japan in 1924 and in India adjoining border of southern terai districts of Nepal was reported from Gorkhpur district of Uttar Pradesh in 1978. Since then the JE has become a major public health problem in all Terai districts of Nepal since 1978. The current epidemiological survey study has revealed that both the ricefields and the ponds situated in every indemic villages are chiefly contributing towards the population density of *Culicine* mosquitoes. In view of recurrent outbreaks in Terai districts and widespread breeding places of mosquitoes there is a urgent need to asses the feasibility of suitable vector control measures including antilarval operations and ultra-low volume application of insecticides in all the affected endemic districts.

The objectives of this study were :

1. To study the epidemiological pattern of JE in the country specially in 24 endemic districts of Nepal.
2. To analyze the morbidity and mortality data of human cases and find out the case fatality rate by age and sex groups.
3. To study on the animal reservoir for JE and its population both in endemic as well as 75 districts of Nepal.
4. To study on the vectors of JE present in the endemic area.
5. To suggest the future research, prevention and control activities on JE in Nepal

I am most grateful to the Medical Superintendents of different hospitals mainly of terai areas, Director of the Epidemiology Division, Department of Health Services, alongwith medical staffs working in different indoor and outdoor departments for their kind support and information provided to our team. I must thank all the staffs of this centre particularly Ms. Minu Sharma, Mr. S.P. Bhandary and Mr. Narayan Karki for their wounderful work during survey as well as report writting.

Dr. D. D. Joshi
Project Coordinator

Conversion Table from Nepali year B.S. to English year A.D.

Nepali Month Conversion Table	
Nepali Month	Equivalent
Baishak	middle of April to middle of June
Jestha	middle of May to middle of July
Asadh	middle of June to middle of July
Srawan	middle of July to middle of August
Bhadra	middle of August to middle of September
Aswin	middle of September to middle of October
Kartik	middle of October to middle of November
Mangsir	middle of November to middle of December
Poush	middle December of to middle of January
Magh	middle of January to middle of February
Falgun	middle of February to middle of March
Chaitra	middle of March to middle of April

Nepali Year Conversion Table	
Nepalj Year (Begins in Mid April)	Equivalent
B.S.	A.D.
2045	1988/89
2046	1989/90
2047	1990/91
2048	1991/92
2049	1992/93
2050	1993/94
2051	1994/95
2052	1995/96
2053	1996/97
2054	1997/98
2055	1998/99

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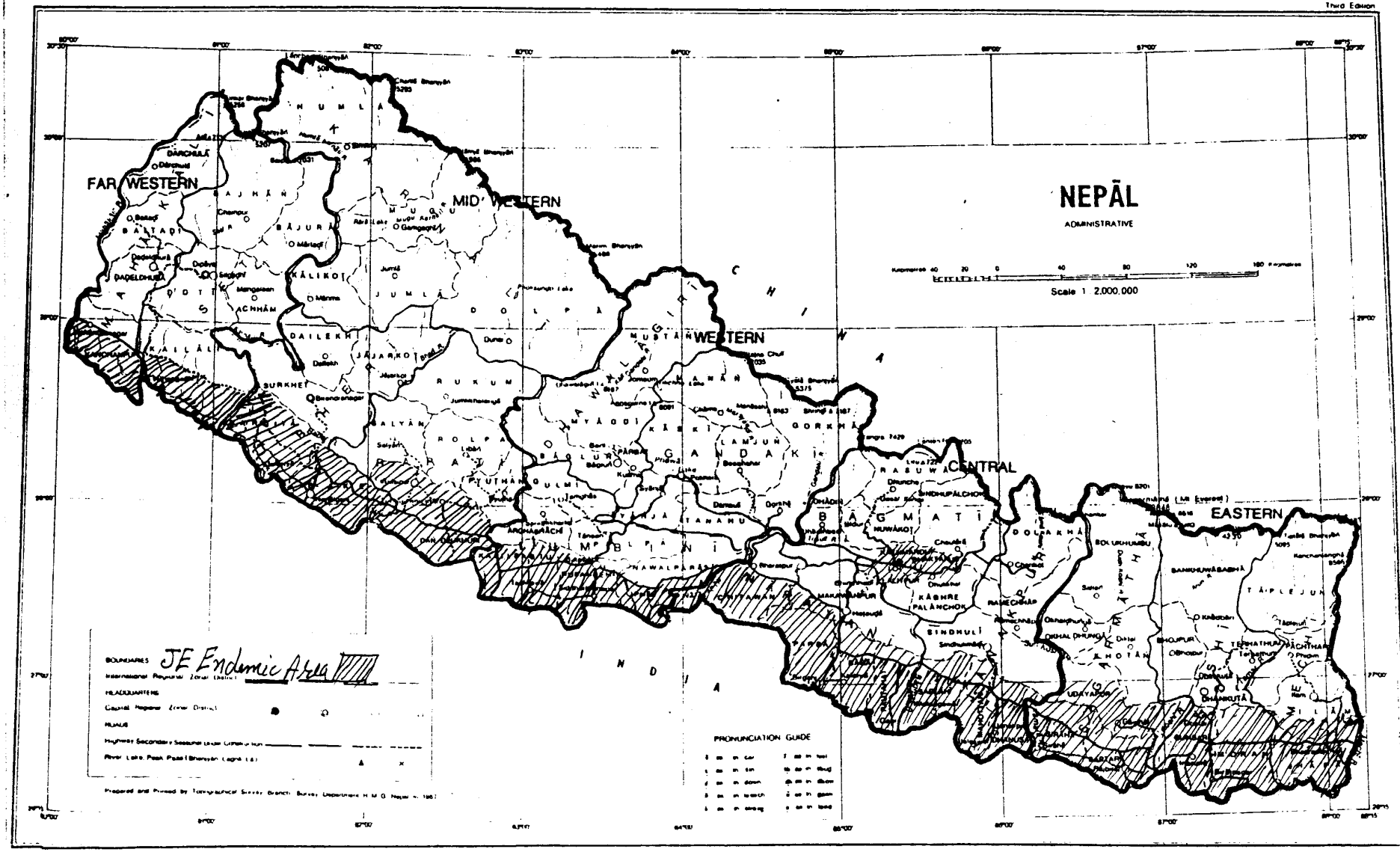

Third Edition
NEPĀL
ADMINISTRATIVE
Scale 1 2,000,000
FAR WESTERN
MID WESTERN
WESTERN
CENTRAL
EASTERN
CHINA
INDIA
JE Endemic Area
PRONUNCIATION GUIDE

Summary

In Nepal during the past two decades Japanese Encephalitis (JE) is known to occur mainly in southern terai districts of Nepal but recently during 1996 and 1997 Kathmandu valley particularly sauthern of part of Lalitpur districts the first outbreak of JE was reported which was confirmed both serologically and virologically. Epidemiological surveillance study was carried out in all 18 JE endemic terai districts of Nepal during the months of November& December of 1996 and 1997 respectively. Results of epidemiological, entomological and serological investigation are presented, tabulated, analyzed and discussed. A total of 1687 cases and death 353 (21% Case fatality rate) during 1996 and during 1997 total cases were 1740 with death 126 cases (7% CFR). All age & sex groups are infected with the disease however below 15 years children were more prevalent with 21% & 7% CFR in male and 16% and 6% CFR in female children during 1996 and 1997 respectively. Where as in adult both male and female has got 23% and 25% CFR respectively. There is a seasonal difference in occuring diseases maximum number of cases were appeared during the months of June to October and August was observed as a peak period during both years.

It has long been recognised that the feeding behaviour of Culicin mosquitoes is of paramount impotance in the epidemiology of mosquito-borne JE pathogens. Host feeding pattern of vector mosquitoes is crucial for the maintenance of the complex natural cycle of JE virus, which includes pigs and birds and sometime large animals like buffaloes and cattle. The virus is transmitted from pig to pig and bird to pig by *Culex species* of mosquito. The human beings are only incidental hosts of JE. The role of pigs and ducks as amplifier hosts is well established in Nepal as well as in other southeast Asian countries. Except dog *Cx. vishnui* was found to feed on man, cattle, buffalo, pig, birds and goats showing its wide range of feeding. Among them bovids were found to be preferred hosts after pig and ducks. Pigs and ducks possess a high body temprerature and attract large numbers of the mosquitoes on their body surface and pig-mosquito-pig cycle, duck-mosquito-duck-mosquito-pig cycle is thus maintained. In Nepal it has been observed in recent outbreaks 1996 and 1997 the feeding behaviour of mosquito on bovid in the endemic areas where there are no pigs and ducks population. This means the epidemiological pattern of the disease transmission could be buffalo-mosquito-buffalo and cattle-mosquito-cattle cycle is possible with more contact with humans infection through vectors. JE virus isolation studies in the endemic areas from mosquitoes, animals and diseases human beings are needed to confirm this hypothesis.

1. Background Information

1.1 Background of Nepal

Nepal is divided five development regions up into fourteen zones and these are further divided into a total of 75 districts which are divided up into 58 municipalities and 4,200 Village Development Committees (VDC) administratively. The total human population is about 20 million (CBS, 1994). The geographical distribution of Japanese encephalitis during 1996 and 1997 is presented in Map 1 & 2.

1.2 Epidemiological Background Information on Japanese Encephalitis

Japanese encephalitis (JE) is a vector-borne (mosquito) arboviral disease of major public health concern in Asian countries. Annually more than 35,000 clinical cases and 10,000 deaths are reported from the Asia (Tsai et al., 1993). In Nepal JE has only been officially reported since 1978 and is endemic to the southern part of the country bordering with India (Joshi, 1981) as well as all adjoining districts of India (Bhardwaj, 1981) and maintained in enzootic forms under specific ecological conditions in both endemic zones (Joshi, 1981, 1983, 1983a, 1987, 1994, Sehgal, 1989 and Ogawa et al., 1992).

In Nepal during the past two decades Japanese Encephalitis (JE) is known to occur mainly in southern terai districts of Nepal but recently during 1996 and 1997 Kathmandu valley particularly sauthern of part of Lalitpur districts the first outbreak of JE was reported which was confirmed both serologically and virologically. Epidemiological surveillance study was carried out in all 18 JE endemic terai districts of Nepal during the months of November& December of 1996 and 1997 respectively. Results of epidemiological, entomological and serological investigation are presented, tabulated, analyzed and discussed. A total of 1687 cases and death 353 (21% Case fatality rate) during 1996 and during 1997 total cases were 1740 with death 126 cases (7% CFR). All age & sex groups are infected with the disease however below 15 years children were more prevalent with 21% & 7% CFR in male and 16% and 6% CFR in female children during 1996 and 1997 respectively. Where as in adult both male and female has got 23% and 25% CFR respectively. There is a seasonal difference in occuring diseases maximum number of cases were appeared during the months of June to October and August was observed as a peak period during both years.

It has long been recognised that the feeding behaviour of Culicin mosquitoes is of paramount impotance in the epidemiology of mosquito-borne JE pathogens. Host feeding pattern of vector mosquitoes is crucial for the maintenance of the complex natural cycle of JE virus, which includes pigs and birds and sometime large animals like buffaloes and cattle. The virus is transmitted from pig to pig and bird to pig by *Culex species* of mosquito. The human beings are only incidental hosts of JE. The role of pigs and ducks as amplifier hosts is well established in Nepal as well as in other southeast Asian countries. Except dog *Cx. vishnui* was found to feed on man, cattle, buffalo, pig, birds and goats showing its wide range of feeding. Among them bovids were found to be preferred hosts after pig and ducks. Pigs and ducks possess a high body temprerature and attract large numbers of the mosquitoes on their body surface and pig-mosquito-pig cycle, duck-mosquito-duck-mosquito-pig cycle is thus maintained. In Nepal it has been observed in recent outbreaks 1996 and 1997 the feeding behaviour of mosquito on bovid in the endemic areas where there are no pigs and ducks population. This means the epidemiological pattern of the disease transmission could be buffalo-mosquito-buffalo and cattle-mosquito-cattle cycle is possible with more contact with humans infection through vectors. JE virus isolation studies in the endemic areas from mosquitoes, animals and diseases human beings are needed to confirm this hypothesis.

The prevention and control of JE has been a challenging problem in view of non-availability of effective chaemoprophylaxis against the virus and limitations of immuno-prophylaxis. There have been attempts for effective prevention and control of JE by malathion spraying, directing the control measures against the vectors Culicine mosquitoes. However, this approach too has its own limitation because the known vectors of JE in Nepal namely Culex species mainly breed in large paddy fields and pound limiting the effectiveness and feasibility of the larval control. JE virus transmission is from domestic animals and birds as a reservoirs because the JE virus in nature is found in pigs, birds and large animals like water buffaloes and cattle. In Nepal pigs and ducks have been found as a main reservoirs of JE virus. In the present senario the epidemiology of JE has undergone considerable changes over the last two decates. There are no reports of antibodies in 'sentinel' pigs from terai districts of the country. Therefore, seroconversion profile of sentinel pigs and birds with its relation to endemicity pattern of JE in Nepal must be carried out urgently. The human cases of JE have been known to occur between mid June to mid October with peaks in August and September. Therefore, the JE transmission period epidemiologically can be considered as July to October with a peak September.

This disease was first recognised in Japan in 1924 and in India adjoining border of southern terai districts of Nepal was reported from Gorkhpur district of Uttar Pradesh in 1978. Since then the JE has become a major public health problem in all Terai districts of Nepal since 1978. The current epidemiological survey study has revealed that both the ricefields and the ponds situated in every indemic villages are chiefly contributing towards the population density of Culicine mosquitoes. In view of recurrent outbreaks in Terai districts and widespread breeding places of mosquitoes there is a urgent need to asses the feasibility of suitable vector control measures including antilarval operations and ultra-low volume application of insecticides in all the affected endemic districts. Japanese encephalitis (JE) is a serious acute mosquito-borne (Culicine mosquitoes) viral zoonotic disease and is endemic throughout most of the Far east, South Est Asia and South Asia including Nepal. The first indication of JE transmission in Nepal was from northern India (Bihar, Uttar Pradesh and West Bengal states) where an apparent Japanese encephalitis outbreak was reported for the first time. Outbreaks recurred exclusively in south India from 1948 until 1978 (Sehgal, P.N. 1989 and Joshi 1981 and Khatri *et al.*, 1981, Parajuli *et al.*, 1992).

Children aged five to fifteen are the main victims. The case fatality rate (CFR) is high and Nepal and nationwide it has ranged between 15% to 46% for the years 1978 to 1994. About fifty percent of the JE survivors are left with neurological syndrome and damage to the organs. Epidemics in Nepal have been recorded since 1978 and the virus as been isolated from pig and human cases of JE in the eastern Tarai (lowlands) of Nepal (Joshi *et al.*, 1995, Khatri *et al.*, 1981, 1983). JE virus causes encephalitis in humans and horse and abortions in pigs and no symptoms in other animals and birds. JE virus is an enveloped RNA virus, small in size, approximately 50 nm in diameter and belongs to the family Togaviridae and the genus *Flaviviridae* (Tsai, *et al.*, 1993 and Burke, 1988, Bhardwaj et. al. 1981, Bista et. al. 1993, Seghal 1989). The JE incidence appears to be subsiding in Japan, China (PRC) and the Republic of Korea, but it has been increasing and is endemic in India, Thailand, Sri Lanka, Bangladesh, Myanmar (Burma), Viet Nam, Malaysia, Indonesia, Laos, Cambodia, Taiwan and Nepal (Joshi 1981, 1983a).

2. Objectives : The objectives of this study were :

2.1. To study the epidemiological pattern of JE in the country specially in 24 endemic districts of Nepal.

2.2. To analyze the morbidity and mortality data of human cases and find out the case fatality rate by age and sex groups.

2.3. To study on the animal reservoir for JE and its population both in endemic as well as 75 districts of Nepal.

2.4. To study on the vectors of JE present in the endemic area.

2.5. To suggest the future research, prevention and control activities on JE in Nepal

3. Methodology

3.1 Epidemiological Surveillance

Epidemiological surveillance study by the team from NZFHRC has conducted in all 18 terai districts endemic areas of JE during 1996 and 1997 outbreaks. All the Nationwide morbidity, mortality, seasonal occurance, JE vectors information and animal reservoirs situation were collected, analysed, tabulated and presented in this report. Nationwide Case Fatality Rate of Japanese Encephalitis from 1978 to 1997 is presented in table . Nationwide JE death cases, CFR and Total cases recorded were presented in fig.

3.2 Animal Reservoirs for JE

Pigs and ducks have been found to be the main amplifiers and reservoirs of the JE virus in Nepal during the outbreaks of 1996 and 1997. The JE virus has not yet been isolated from either animals, birds, Culiciné mosquitoes or human. This needs further research studies to be carried out in Nepal. Serological studies have detected antibodies in sera from pigs and ducks in endemic areas (Joshi, 1984, Joshi et al., 1984 and 1994). In the rice field areas of the Tarai, Culicine mosquitoes proliferate in close association with wading birds and ducks which are among the principal vertebrate amplifying hosts (see Figure 1, Tsai et al. 1993) (Burke et al., 1984 and Regmi et al., 1984).

3.3 Vector Responsible for JE

Entomological studies were carried out during the outbreaks of 1996-1997. In previous study forty-one species of mosquitoes identified in the affected areas. Culicine mosquitoes as *Culex* species with predominance of *Culex tritaeniorhynchus*, *Culex vishnui* complex, *Culex gelidus* and *Culex fuscocephalus* have been shown to transmit the JE virus in both animals and humans (Pradhan, 1981, 1982, Regmi, et al., 1984, Khatri et al., 1981-83).

3.4 JE Vaccines

There are 3 types of JE vaccines are currently in large-scale production available globaly and use, namely such as :

1) mouse brain-derived inactivated vaccine;
2) cell culture-derived inactivated vaccine; and
3) cell culture-derived live attenuated vaccine.

It has been observed during the survey that only limited amount of mouse brain-derived inactivated vaccine has been used by some of the NGO's and INGO's in an endemic area only in few school childrens population but this has been not taken as a regular vaccination programme under expanded immunizaiton programme of Ministry of Health, HMG Nepal. The cost of these JE vaccines is very very expensive which is not affordable in the poorest country of Asia like Nepal.

4. Results

4.1 Nationwide JE Cases

The present study has revealed that the JE situation in Nepal from 1978 onward showed increasing trained in the incidence of JE from the human population point of view, coverage of geographical area, seasonal occurance, vector bionomics, animal reservoir hosts and environmental and climatic changing effects. Since it is a vector borne viral zoonotic disease so far Culicine mosquitoes species viz. *Culex tritaeniorhynchus, Cx. vishnui, Cx. pseudovishnui, Cx. gelidus and Cx. fuscocephala* have been incriminated and identified of vectors of JE. The female mosquitoes are known to feed on a side range of vertebrates including man. Where as some Culicine species have a restricted host range and distinct feeding preferences. JE is a viral zoonotic disease transmitted by mosquito vector bite and caused by arbovirus (flavivirus) which affects the central nervous system. The virus is maintained in nature in animals reservoirs like pigs, cattle and birds.

4.1.1 Morbidity and Mortality Statistics of JE Cases in Different Hospitals

Nationwide Case Fatality Rate of Japanese Encephalitis from 1978 to 1997 is presented in table 1 & fig. 1, 2 & 3. It has been observed that the CFR is ranging from 7 to 46 in different years of outbreaks.

Table 1 : Nationwide Case Fatality Rate of Japanese Encephalitis from 1978 to 1997

Year	Cases	Deaths	CFR%
1978	422	119	28
1979	182	49	27
1980	622	231	37
1981	54	16	30
1982	843	390	46
1983	243	36	15
1984	142	45	32
1985	597	146	24
1986	1,299	357	27
1987	338	69	20
1988	1,108	188	16
1989	868	227	26
1990	358	129	36
1991	276	105	38
1992	517	182	35
1993	394	125	32
1994	1,029	170	17
1995	1,242	197	16
1996	1,687	353	21
1997	1,740	126	7
Total	13,961	3260	530

Fig.1.

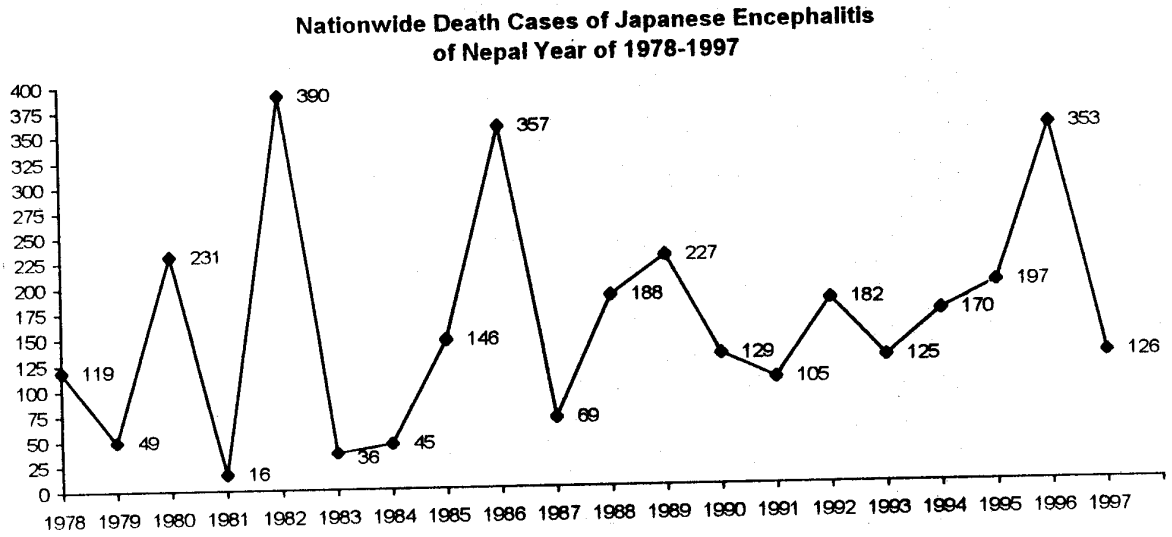

Nationwide Death Cases of Japanese Encephalitis
of Nepal Year of 1978-1997
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
119
49
231
16
390
36
45
146
357
69
188
227
129
105
182
125
170
197
353
126
1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997

Fig. 2

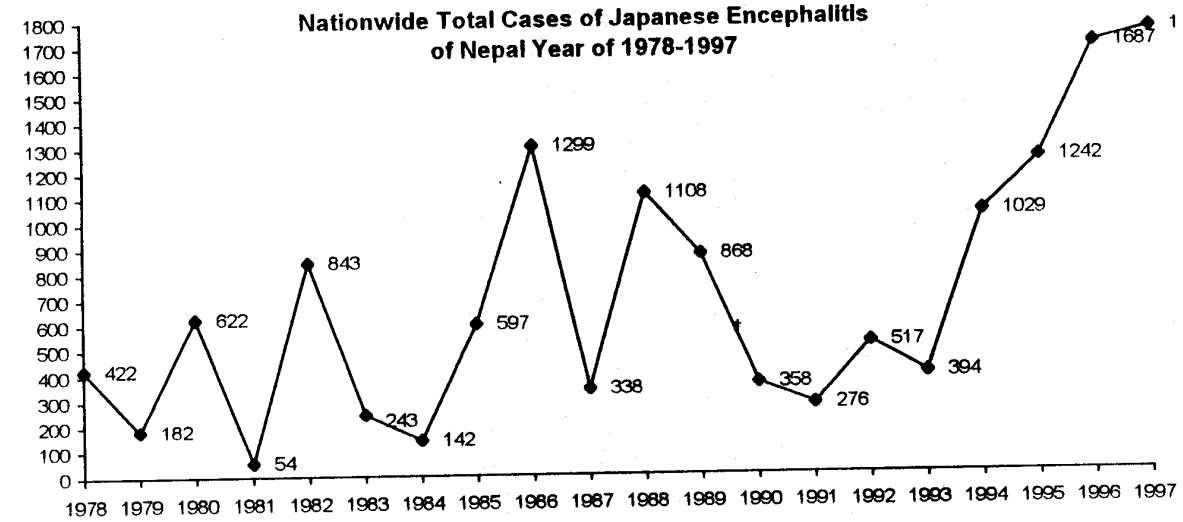
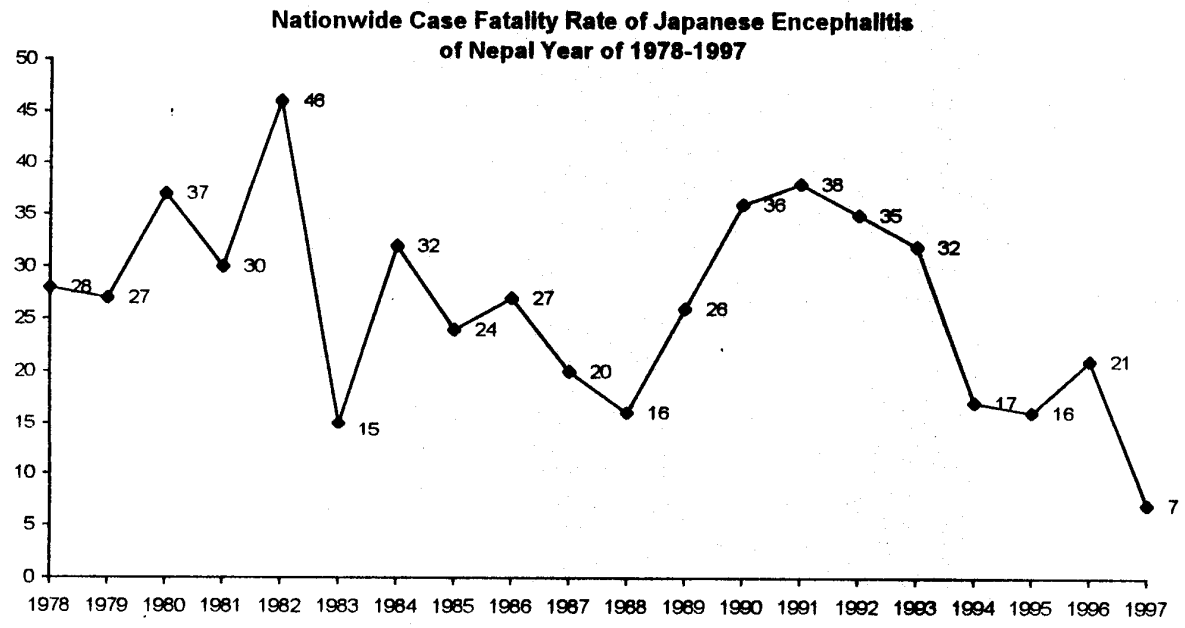

Nationwide Total Cases of Japanese Encephalitis
of Nepal Year of 1978-1997
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
422
182
622
54
843
243
142
597
1299
338
1108
868
358
276
517
394
1029
1242
1687
1
1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997

Fig. 3

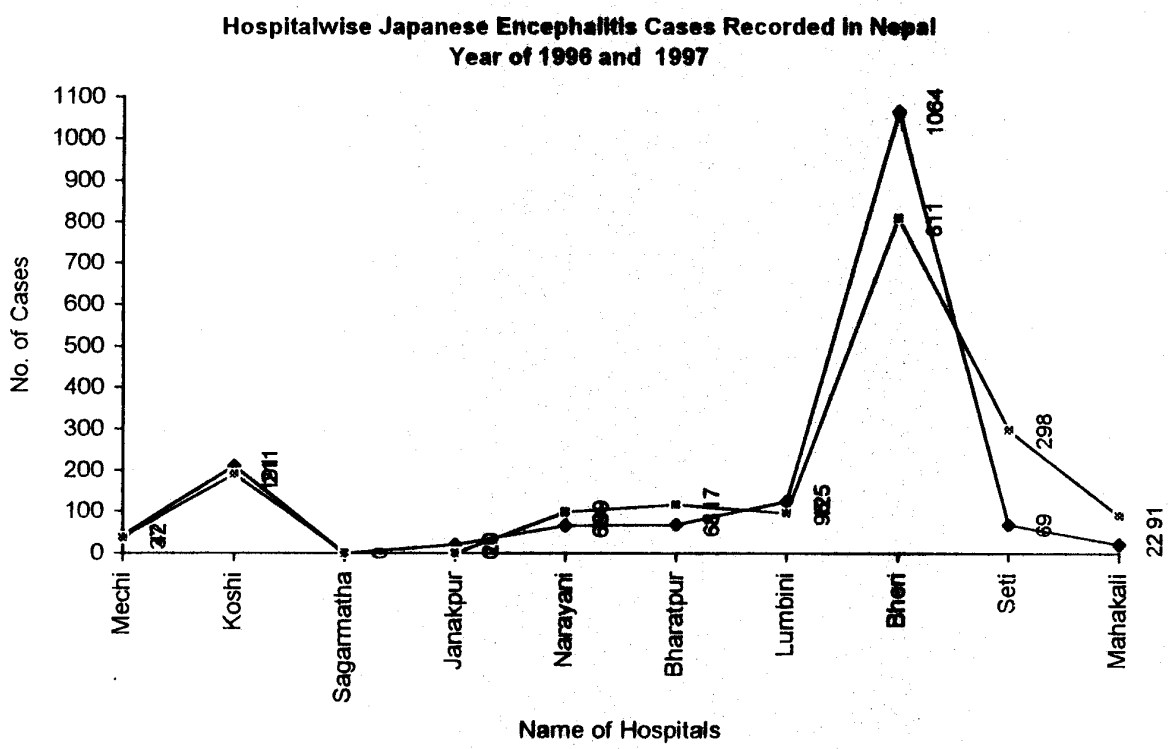


Hospitalwise Japanese Encephalitis Cases in Nepal Year of 1996 and 1997 is presented in table 2 & fig. 4. Out of 10 zonal hospitals Bheri has got the highest number of JE cases in both the year 1996 and 1997 and next to that Koshi has second highest.

Table 2 : Hospitalwise Japanese Encephalitis Cases in Nepal Year of 1996 and 1997

Hospital	1996					1997				
	>15 years		<15 years		Total	>15 years		<15 eayrs		Total
	M	F	M	F		M	F	M	F	
Mechi	18	13	5	6	42	11	9	7	10	37
Koshi	77	72	37	25	211	84	57	20	30	191
Sagarmatha	0	0	0	0	0	0	0	0	0	0
Janakpur	4	9	3	4	20	0	0	0	0	0
Narayani	24	23	11	8	66	35	37	15	12	99
Bharatpur	7	6	28	27	68	17	18	48	34	117
Lumbini	34	44	31	16	125	50	27	7	12	96
Bheri	335	255	295	179	1064	327	217	119	148	811
Seti	33	11	16	9	69	120	87	56	35	298
Mahakali	4	2	9	7	22	31	23	21	16	91
Total	546	435	435	281	1687	675	475	293	297	1740

Fig. 4



Age & Sexwise Japanese Encephalitis Cases Recorded in Nepal is presented in table 3 & fig. 6 & 7. Among the age groups children are more affected than adults. Male children are more in number than female children.

Table 3 : Age & Sexwise Japanese Encephalitis Cases Recorded in Nepal

Age & Sex	1996				1997			
	Total Cases	%	Death	CFR	Total Cases	%	Death	CFR
0 - 15 Male	536	32	112	21	675	39	45	7
0 - 15 Female	435	26	71	16	475	26	29	6
16 & above Male	435	26	101	23	293	17	29	10
16 & above Female	281	16	69	25	297	17	23	8
Total = >	1687	100	353	21	1740	100	126	7

Fig. 5

Age & Sexwise Japanese Encephalitis Cases Recorded in Nepal 1996

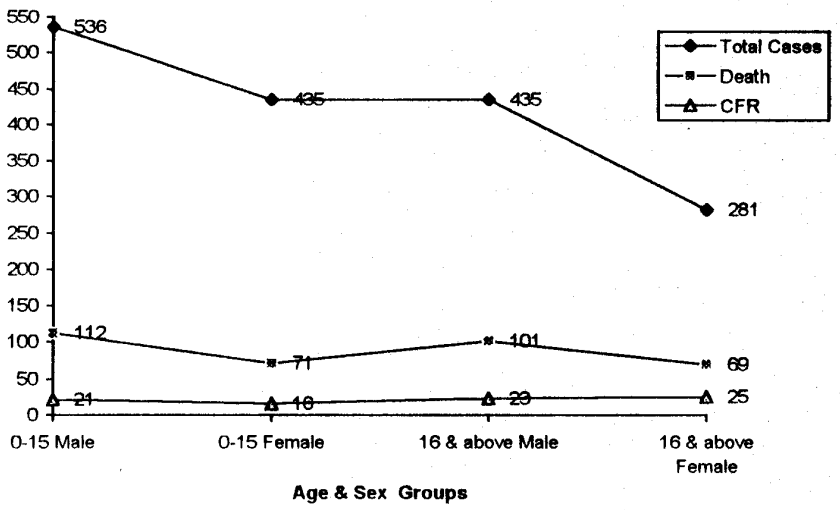
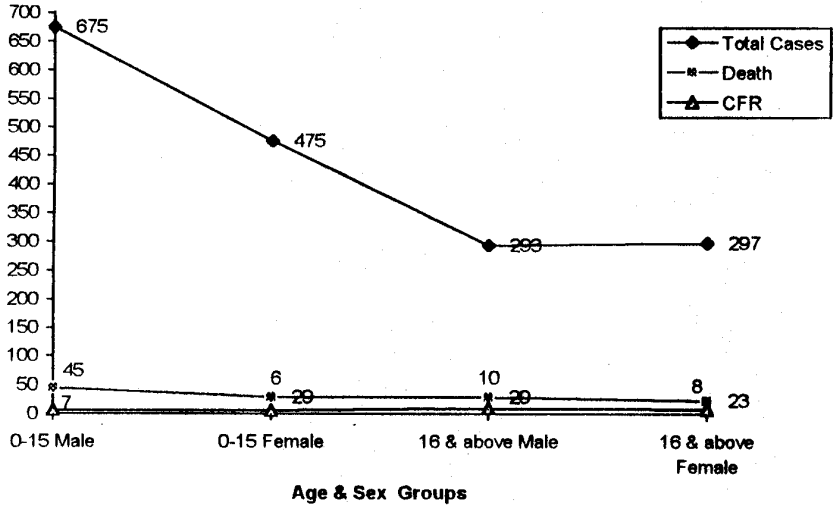


Fig. 6

Age & Sexwise Japanese Encephalitis Cases Recorded in Nepal 1997



Monthwise Japanese Encephalitis Cases Recorded in Nepal is presented in table 4 & fig. 7 & 8. JE cases were recorded more in number from middle of April to middle of October in both the year 1996 and 1997 in all endemic areas. Months of August and September have been recorded the peack period in bot years.

Table 4 : Monthwise Japanese Encephalitis Cases Recorded in Nepal

Month	1996					1997				
	Male	Female	Total	Death	CFR	Male	Female	Total	Death	CFR
Jan	11	10	21	1	5	-	-	-	-	-
Feb	4	10	14	1	7	-	-	-	-	-
March	7	8	15	2	13	-	-	-	-	-
April	16	12	28	4	14	30	11	41	4	10
May	17	17	34	5	15	38	31	69	5	7
June	12	8	20	9	45	23	19	42	5	12
July	16	7	23	11	48	118	38	156	15	10
Aug	85	46	131	16	12	502	255	757	69	9
Sept.	293	164	457	65	14	294	310	604	9	1
Oct.	183	140	323	75	23	32	30	62	8	13
Nov.	176	138	314	79	25	6	3	9	2	22
Dec	171	136	307	85	28	-	-	-	-	-
Total	991	696	1687	353	21	1043	697	1740	117	7

Fig. 7

Monthwise Japanese Encephalitis Cases Recorded in Nepal Year of 1996

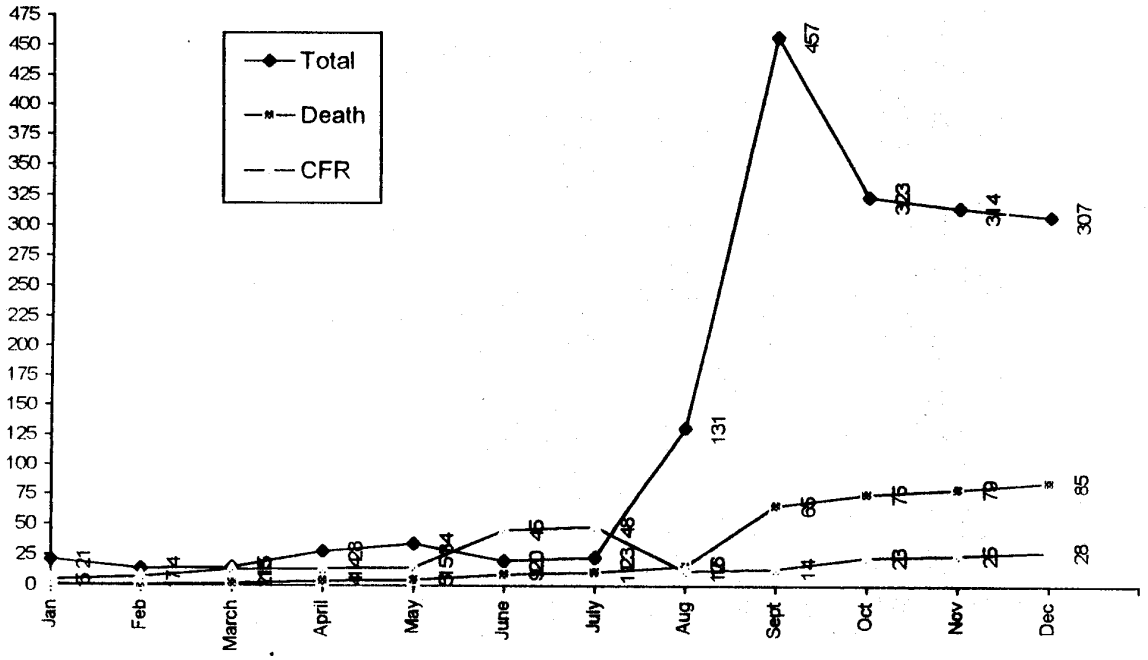
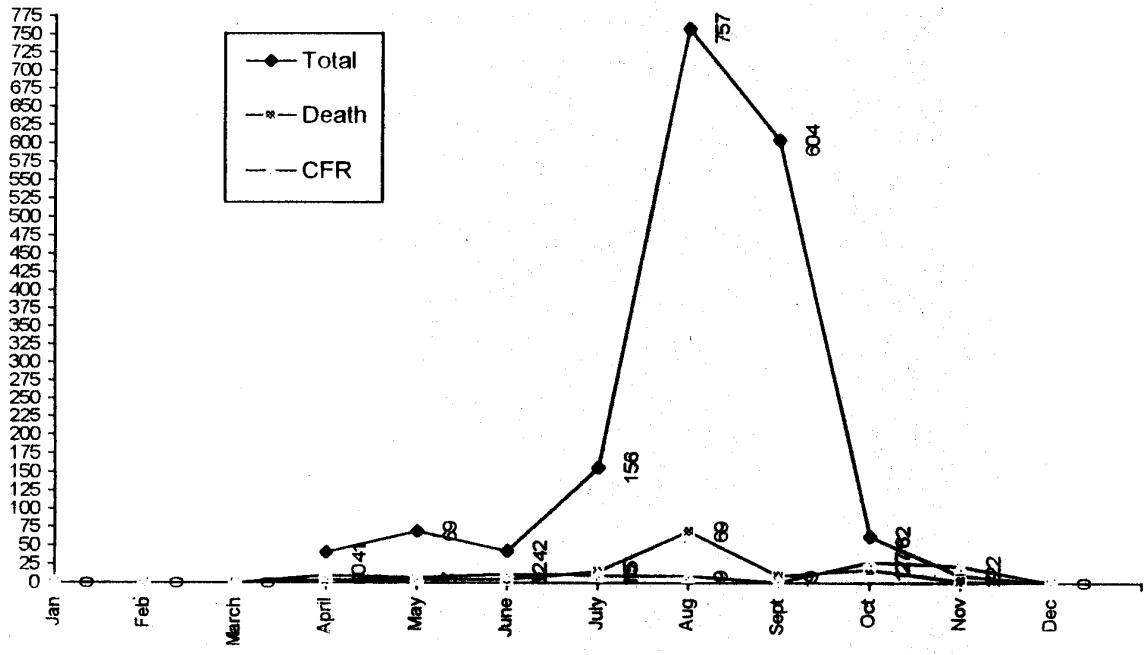


Fig. 8

Monthwise Japanese Encephalitis Cases Recorded in Nepal Year of 1997



4.2 Hospitalwise and Age and Sexwise JE Cases

Monthwise and Age and Sexwise Encephalitis Cases, Year of 2053/054 Recorded in Mechi Zonal Hospital, Koshi Zonal Hospital, Sagarmatha Zonal Hospital, Janakpur Zonal Hospital , Narayani Zonal Hospital, Bharatpur Hospital, Lumbini Zonal Hospital, Bheri Zonal Hospital, Seti Zonal Hospital and Mahakali Zonal Hospital is presented in table 5 to 36 and fig. 9 to 18.

Table 5 : Month wise Encephalitis Cases Recorded in Mechi Zonal Hospital, Bhadrapur, Jhapa Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha						
Ashad						
Shrawan	6	26.1	1	5.0	7	16.3
Bhadra	6	26.1	8	40.0	14	32.2
Aswin	8	34.8	6	30.0	14	32.2
Kartik	1	4.3	2	10.0	3	7.0
Mangsir	1	4.3	1	5.0	2	4.7
Paush						
Magh	1	4.3			1	2.3
Falgun						
Chaitra						
Grand Total	23	100	20	100	43	100

Table 6 : Month wise Encephalitis Cases Recorded in Mechi Zonal Hospital, Bhadrapur, Jhapa Year 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha			2	10.5	2	5.4
Ashad	3	16.7	1	5.3	4	10.8
Shrawan	4	22.3	3	15.8	7	18.9
Bhadra	10	55.6	12	63.2	22	59.5
Aswin	1	5.6	1	5.3	2	5.4
Kartik						
Mangsir						
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	18	100	19	100	37	100

Table 7 : Age & Sexwise Encephalitis Cases Recorded in Mechi Zonal Hospital, Jhapa Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	18	43
> 15 Female Child	13	31
< 16 & above Male	5	12
< 16 & above Female	6	14
Grand Total	42	100

Table 8 : Age & Sexwise Encephalitis Cases Recorded in Mechi Zonal Hospital, Jhapa Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	11	30
> 15 Female Child	9	24
< 16 & above Male	7	19
< 16 & above Female	10	27
Grand Total	37	100

Table 9 : Monthwise Encephalitis Cases Recorded in Koshi Zonal Hospital, Biratnagar Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	13	11.4	7	7.2	20	9.4
Jestha	12	10.5	11	11.3	23	11.0
Ashad	12	10.5	8	8.2	20	9.4
Shrawan	16	14.0	4	4.1	20	9.4
Bhadra	7	6.1	13	13.4	20	9.4
Aswin	4	3.5	6	6.1	10	4.7
Kartik	8	7.0	4	4.1	12	5.7
Mangsir	13	11.4	7	7.2	20	9.4
Paush	9	7.9	11	11.3	20	9.4
Magh	10	8.8	10	10.3	20	9.4
Falgun	4	3.5	10	10.3	14	6.6
Chaitra	6	5.2	6	6.1	12	5.7
Grand Total	114	100	97	100	211	100

Table 10 : Monthwise Encephalitis Cases Recorded in Koshi Zonal Hospital, Biratnagar Year 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	12	14.1	3	4.3	15	9.7
Jestha	19	22.4	9	12.9	28	18.1
Ashad	9	10.6	11	15.7	20	12.9
Shrawan	11	12.9	12	17.1	23	14.8
Bhadra	7	8.2	14	20.0	21	13.5
Aswin	13	15.3	10	14.3	23	14.8
Kartik	14	16.5	11	15.7	25	16.1
Mangsir						
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	85	100	70	100	155	100

Table 11 : Age & Sexwise Encephalitis Cases Recorded in Koshi Zonal Hospital, Biratnagar Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	77	36
> 15 Female Child	72	34
< 16 & above Male	37	18
< 16 & above Female	25	12
Grand Total	211	100

Table 12 : Age & Sexwise Encephalitis Cases Recorded in Koshi Zonal Hospital, Biratnagar Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	65	42
> 15 Female Child	57	37
< 16 & above Male	20	13
< 16 & above Female	13	8
Grand Total	155	100

Fig. 9

Age & Sexwise Encephalitis Cases Recorded in Koshi Zonal Hospital, Biratnagar, Year of 2053 & 2054

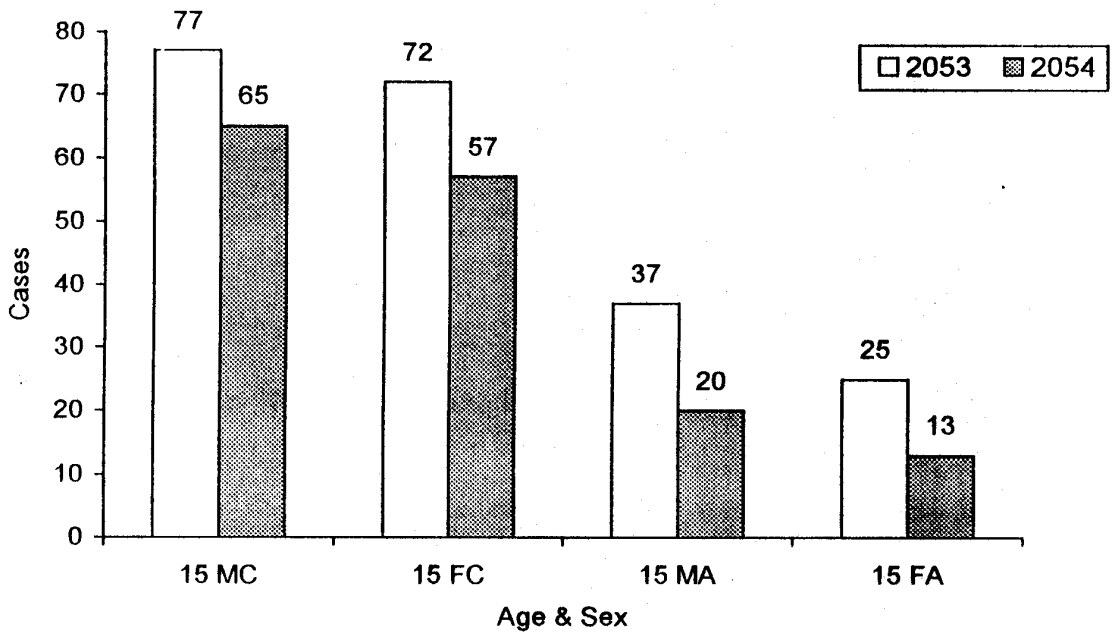


Fig. 10

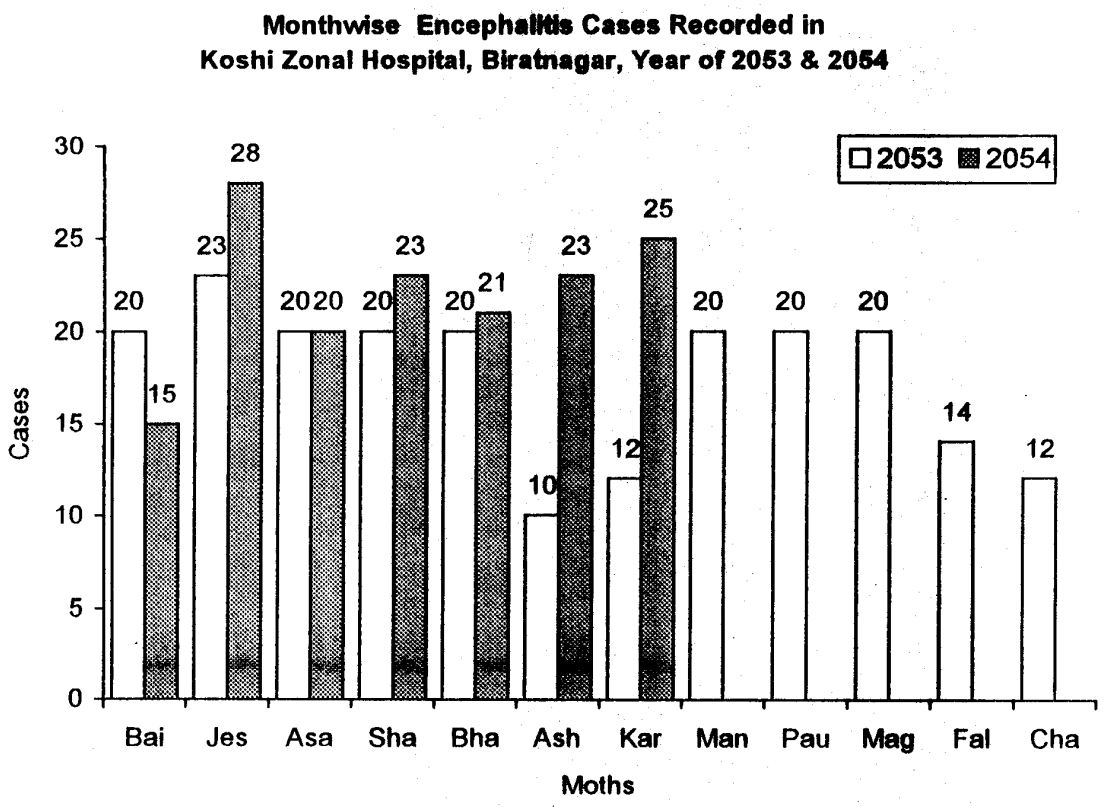


Table 13 : Month wise Encephalitis Cases Recorded in Janakpur Zonal Hospital, Dhanusha Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	1	14.3	1	7.7	2	10.0
Jestha	1	14.3	2	15.4	3	15.0
Ashad						
Shrawan			1	7.7	1	5.0
Bhadra	4	57.1	5	38.5	9	45.0
Aswin						
Kartik						
Mangsir			2	15.4	2	10.0
Paush						
Magh						
Falgun						
Chaitra	1	14.3	2	15.4	3	15.0
Grand Total	7	100	13	100	20	100

Table 14 : Age & Sexwise Encephalitis Cases Recorded in Janakpur Zonal Hospital,Dhanusha Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	4	20
> 15 Female Child	9	45
< 16 & above Male	3	15
< 16 & above Female	4	20
Grand Total	20	100

Fig. 11

Age & Sexwise Encephalitis Cases Recorded in Janakpur Zonal Hospital, Dhanusha, Year of 2053 & 2054

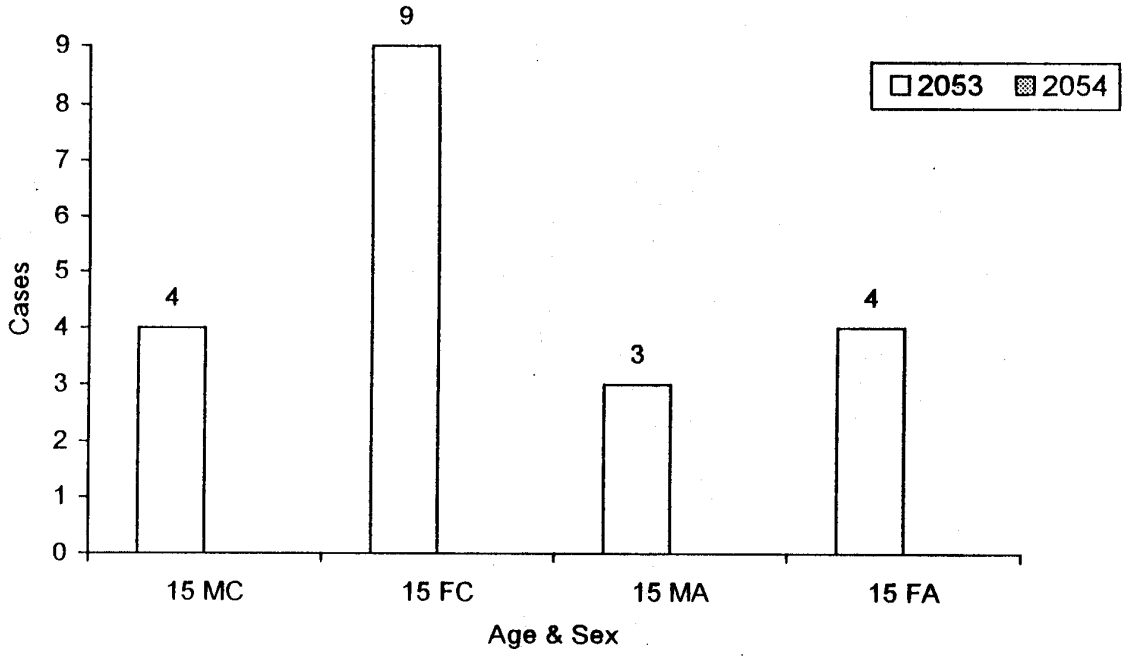


Fig. 12

Fig. 12

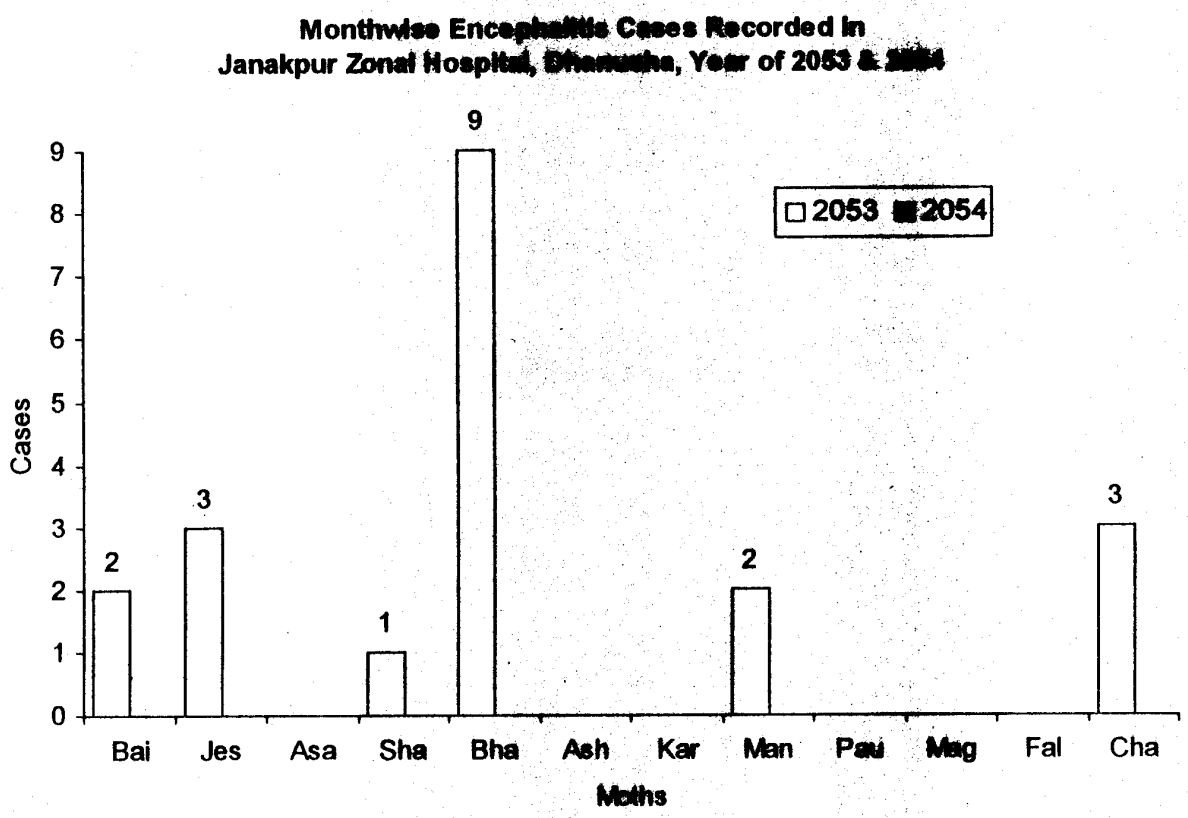


Table 15 : Monthwise Encephalitis Cases Recorded in Narayani SubRegional Hospital,Birgunj Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha						
Ashad						
Shrawan						
Bhadra	17	48.6	9	29.0	26	39.4
Aswin	18	51.4	22	71.0	40	60.6
Kartik						
Mangsir						
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	35	100	31	100	66	100

Table 16 : Monthwise Encephalitis Cases Recorded in Narayani SubRegional Hospital,Birgunj Year 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	9	18.0	3	8.9	12	14.3
Jestha	6	12.0	5	14.8	11	13.1
Ashad	5	10.0	2	5.9	7	8.3
Shrawan	11	22.0	7	20.5	18	21.4
Bhadra	8	16.0	7	20.5	15	17.9
Aswin	5	12.0	5	14.8	10	11.9
Kartik	5	12.0	5	14.8	10	11.9
Mangsir	1	2.0			1	1.2
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	50	100	34	100	84	100

Table 17 :Age & Sexwise Encephalitis Cases Recorded in Narayani SubRegional Hospital,Birgunj Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	24	36
> 15 Female Child	23	35
< 16 & above Male	11	17
< 16 & above Female	8	12
Grand Total	66	100

Table 18 : Age & Sexwise Encephalitis Cases Recorded in Narayani Sub-Regional Hospital, Birgunj Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	35	42
> 15 Female Child	22	26
< 16 & above Male	15	18
< 16 & above Female	12	14
Grand Total	84	100

Table 19 : Month wise Encephalitis Cases Recorded in Bharatpur Hospital, Chitwan Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	2	5.7	4	12.1	6	8.8
Jestha	4	11.4	4	12.1	8	11.8
Ashad						
Shrawan	2	5.7			2	2.9
Bhadra	11	31.4	9	27.3	20	29.4
Aswin	10	28.6	10	30.3	20	29.4
Kartik	6	27.1	3	9.1	9	13.2
Mangsir			3	9.1	3	4.4
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	35	100	33	100	68	100

Table 20 : Month wise Encephalitis Cases Recorded in Bharatpur Hospital, Chitwan Year 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	6	11.3	4	7.7	10	9.5
Jestha	10	18.9	15	28.8	25	23.8
Ashad	1	1.9	2	3.8	3	2.9
Shrawan	2	3.8	3	5.8	5	4.8
Bhadra	17	32.1	18	34.6	35	33.3
Aswin	9	17.0	5	9.6	14	13.3
Kartik	3	5.7	3	5.8	6	5.7
Mangsir	5	9.4	2	3.8	7	6.7
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	53	100	52	100	105	100

Table 21 : Age & Sexwise Encephalitis Cases Recorded in Bharatpur Hospital, Chitwan Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	7	10
> 15 Female Child	6	9
< 16 & above Male	28	41
< 16 & above Female	27	40
Grand Total	68	100

Table 22 : Age & Sexwise Encephalitis Cases Recorded in Bharatpur Hospital, Chitwan Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	17	16
> 15 Female Child	18	17
< 16 & above Male	36	34
< 16 & above Female	34	32
Grand Total	105	100

Table 23 : **Age & Sexwise Encephalitis Cases Recorded in Lumbini Zonal Hospital, Butwal Year 2053**

Age & Sex	Total Cases	%
> 15 Male Child	44	33
> 15 Female Child	44	33
< 16 & above Male	31	23
< 16 & above Female	16	11
Grand Total	135	100

Table 24 : Age & Sexwise Encephalitis Cases Recorded in Lumbini Zonal Hospital, Butwal Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	50	52
> 15 Female Child	27	28
< 16 & above Male	7	8
< 16 & above Female	12	12
Grand Total	96	100

Table 25 : Monthwise Encephalitis Cases Recorded in Bheri Zonal Hospital, Nepalgunj, BankeYear 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha						
Ashad						
Shrawan						
Bhadra						
Aswin	115	19	100	21	215	20
Kartik	153	26	124	26	277	26
Mangsir	161	27	125	26	286	27
Paush	161	27	125	26	286	27
Magh						
Falgun						
Chaitra						
Grand Total	590	100	474	100	1064	100

Table 26 : Monthwise Encephalitis Cases Recorded in Bheri Zonal Hospital, Nepalgunj, BankeYear 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	1	0.2	1	0.3	2	0.2
Jestha	2	0.4			2	0.2
Ashad	5	1	3	1.1	8	1
Shrawan	23	5.1	13	5	36	4.4
Bhadra	312	9.3	103	39.4	415	51.2
Aswin	193	43	130	50	323	40
Kartik	9	2	11	4.2	20	2
Mangsir						
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	549	100	261	100	810	100

Table 27 : Age & Sexwise Encephalitis Cases Recorded in Bheri Zonal Hospital, Nepalgunj, Banke Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	335	31
> 15 Female Child	255	24
< 16 & above Male	295	28
< 16 & above Female	179	17
Grand Total	1064	100

Table 28 : Age & Sexwise Encephalitis Cases Recorded in Bheri Zonal Hospital, Nepalgunj, Banke Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	327	0.4
> 15 Female Child	217	30.5
< 16 & above Male	119	17.
< 16 & above Female	148	21
Grand Total	810	100

Fig. 13

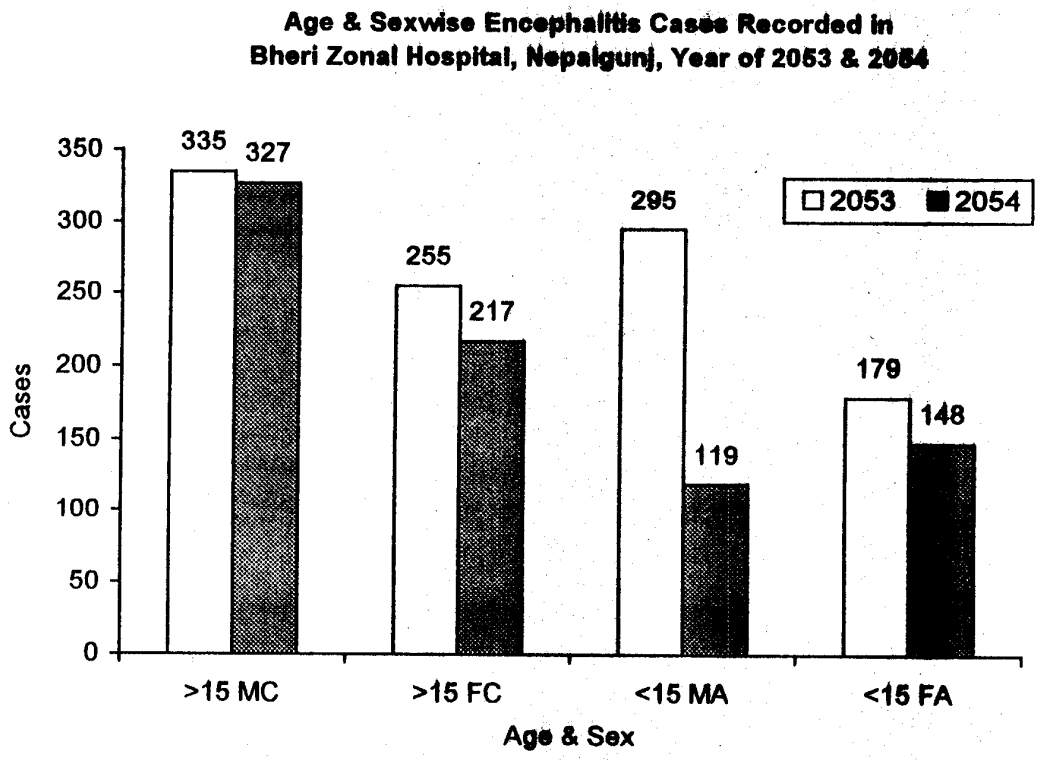


Fig. 14

Monthwise Encephalitis Cases Recorded in Bheri Zonal Hospital, Nepalgunj, Year of 2053 & 2054

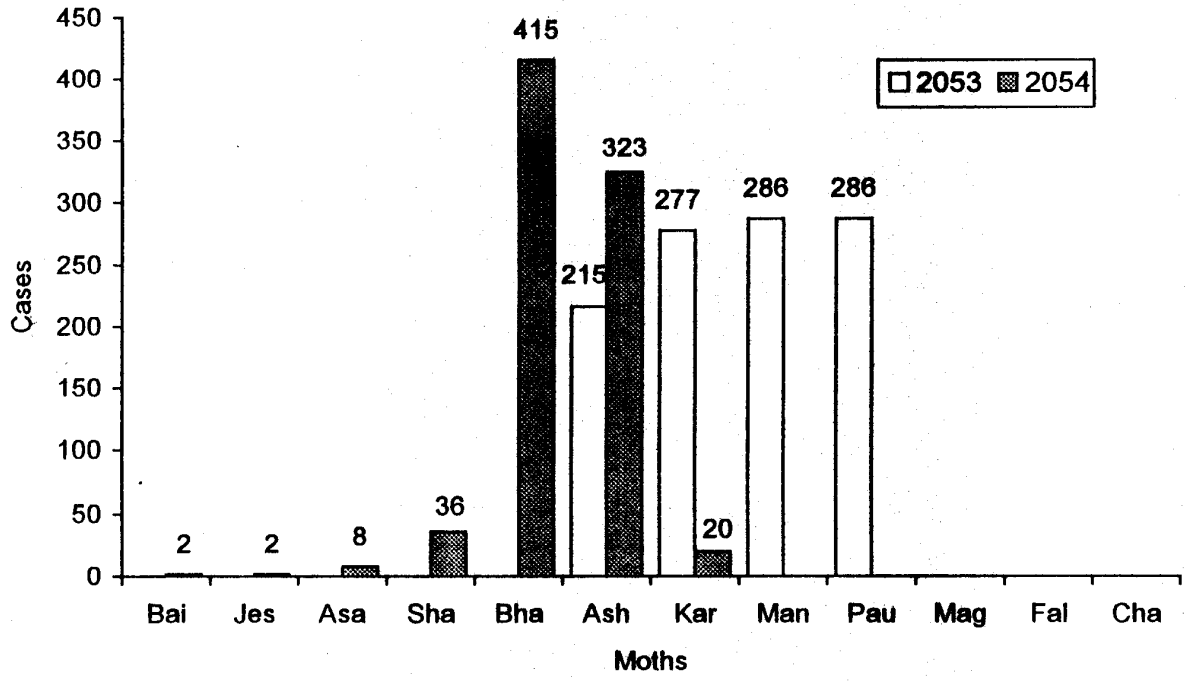


Table 29 : Monthwise Encephalitis Cases Recorded in Seti Zonal Hospital, Kailali, Dhangadi Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha						
Ashad						
Shrawan	1	2	1	5	2	3
Bhadra	2	4	1	5	3	4
Aswin	30	63	14	66	44	64
Kartik	13	27	5	24	18	26
Mangsir	1	2			1	1
Paush	1	2			1	1
Magh						
Falgun						
Chaitra						
Grand Total	48	100	21	100	69	100

Table 30 : Monthwise Encephalitis Cases Recorded in Seti Zonal Hospital, Kailali, Dhangadi Year 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh	2	1.1			2	1
Jestha	1	0.6			1	0.3
Ashad						
Shrawan	3	1.7			3	
Bhadra	126	72	85	69.2	211	71
Aswin	43	24	36	29	79	27
Kartik	1	0.6			1	0.3
Mangsir			1	0.8	1	0.3
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	176	100	122	100	298	100

Table 31 : Age & Sexwise Encephalitis Cases Recorded in Seti Zonal Hospital, Kailali, Dhangadi Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	33	48
> 15 Female Child	11	16
< 16 & above Male	16	23
< 16 & above Female	9	13
Grand Total	69	100

Table 32 : Age & Sexwise Encephalitis Cases Recorded in Seti Zonal Hospital, Kailali, Dhangadi Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	120	40
> 15 Female Child	87	29
< 16 & above Male	56	19
< 16 & above Female	35	12
Grand Total	298	100

Fig. 15

Age & Sexwise Encephalitis Cases Recorded in Seti Zonal Hospital, Kailali, Dhangadi, Year of 2053 & 2054

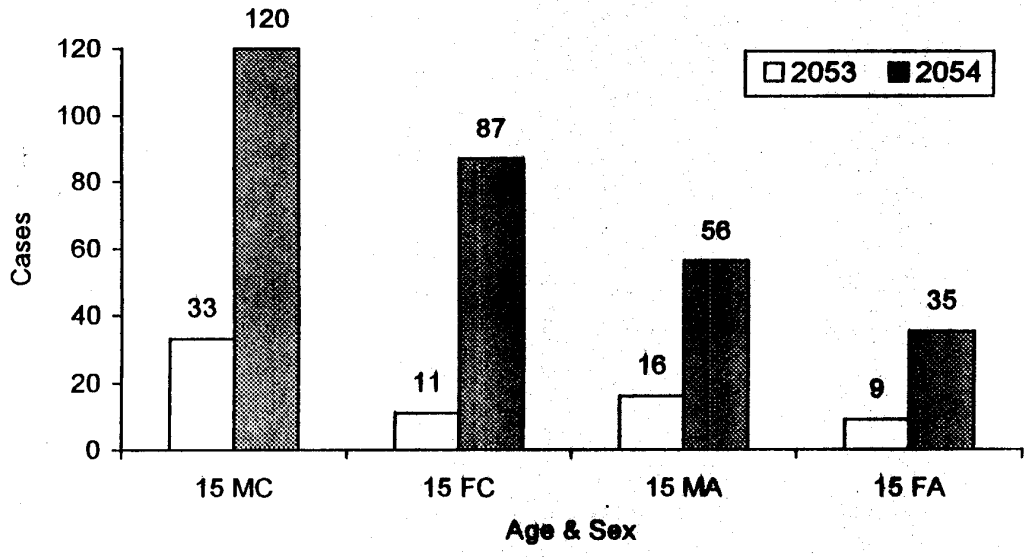


Fig. 16

Monthwise Encephalitis Cases Recorded in Seti Zonal Hospital, Kailali, Dhangadi, Year of 2053 & 2054

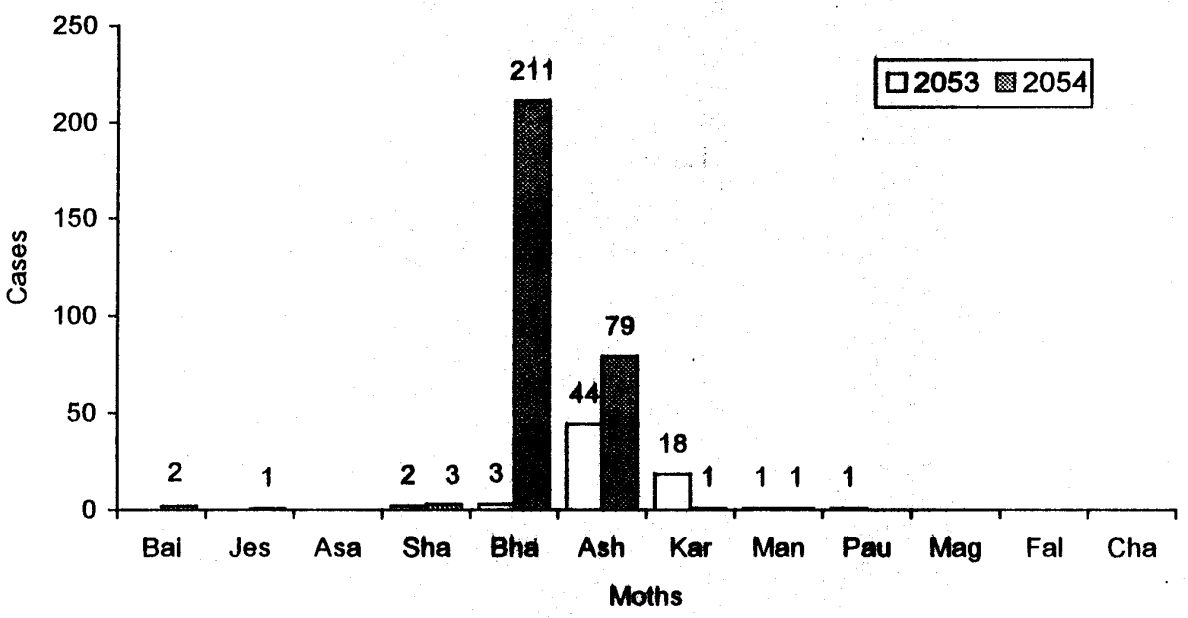


Table 33 : Monthwise Encephalitis Cases Recorded in Mahakali Zonal Hospital, Kanchanpur, Mahendranagar Year 2053

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha						
Ashad						
Shrawan	1	8.0			1	4.5
Bhadra	2	15.3	1	11.1	3	14.0
Aswin	8	61.5	6	67.0	14	64.0
Kartik	2	15.3	2	22.2	4	18.1
Mangsir						
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	13	100	9	100	22	100

Table 34 : Monthwise Encephalitis Cases Recorded in Mahakali Zonal Hospital, Kanchanpur, Mahendranagar Year 2054

Month	M		F		Total Cases	%
	Total Cases	%	Total Cases	%		
Baisakh						
Jestha						
Ashad						
Shrawan						
Bhadra	22	42	16	41	38	42
Aswin	30	58	23	59	53	58
Kartik						
Mangsir						
Paush						
Magh						
Falgun						
Chaitra						
Grand Total	52	100	39	100	91	100

Table 35 : Age & Sexwise Encephalitis Cases Recorded in Mahakali Zonal Hospital, Kanchanpur, Mahendranagar Year 2053

Age & Sex	Total Cases	%
> 15 Male Child	4	18
> 15 Female Child	2	9
< 16 & above Male	9	41
< 16 & above Female	7	32
Grand Total	22	100

Table 36 : Age & Sexwise Encephalitis Cases Recorded in Mahakali Zonal Hospital, Kanchanpur, Mahendranagar Year 2054

Age & Sex	Total Cases	%
> 15 Male Child	31	34
> 15 Female Child	23	25
< 16 & above Male	21	23
< 16 & above Female	16	18
Grand Total	91	100

Fig 17

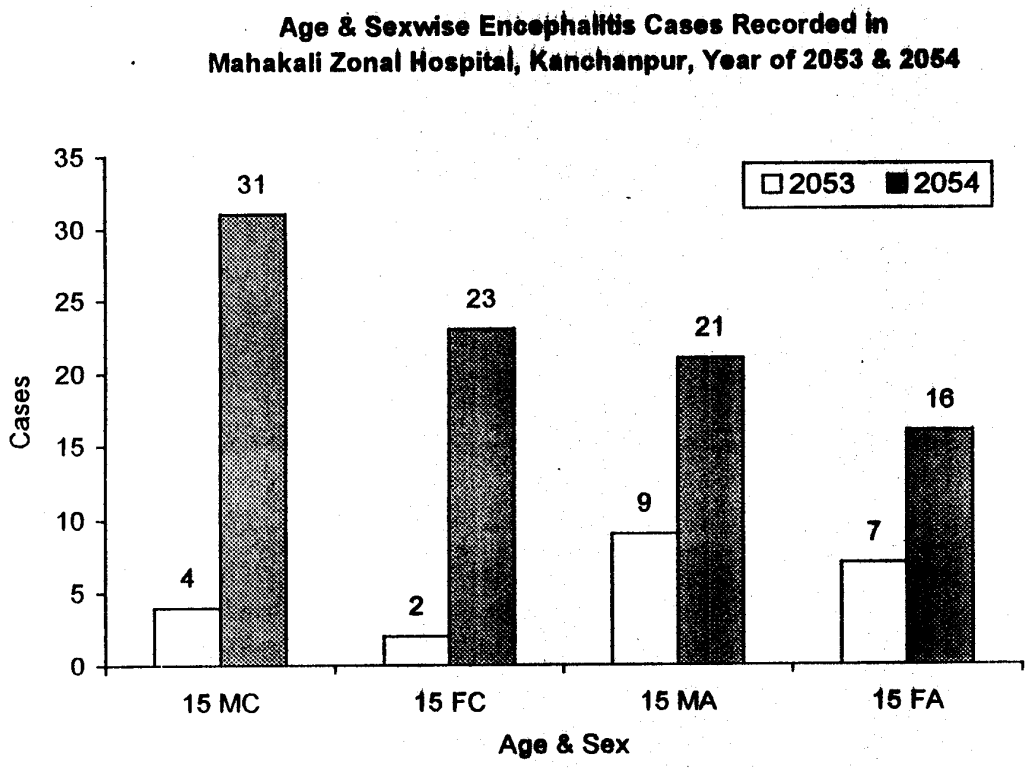
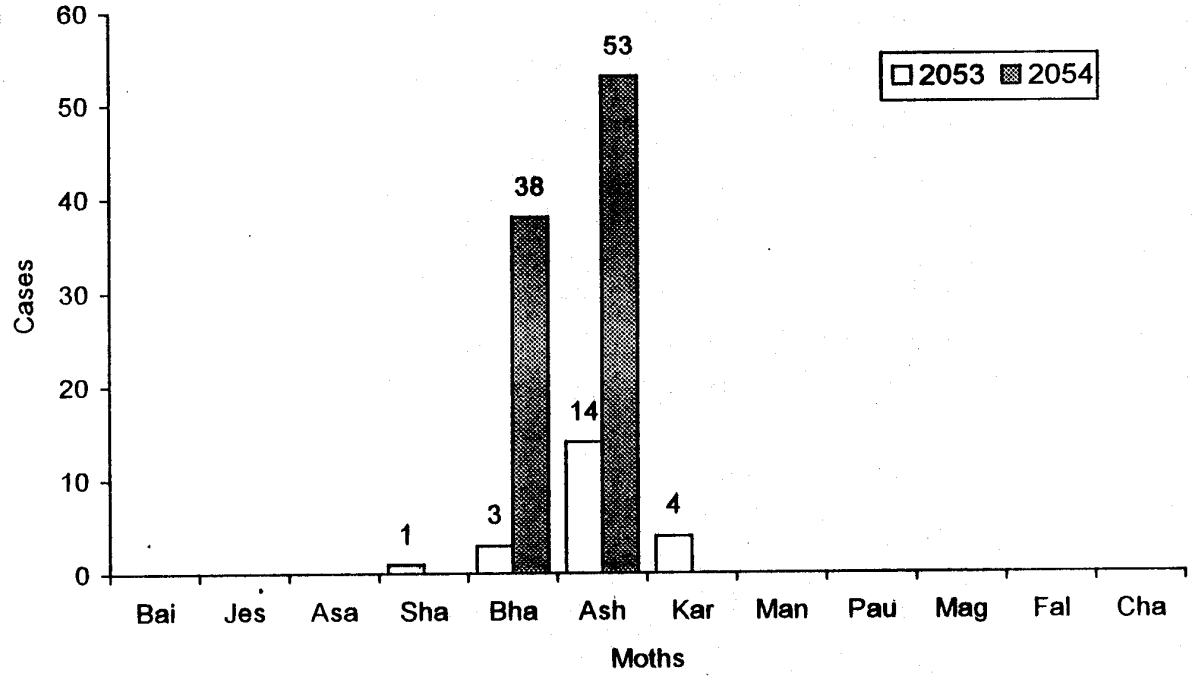


Fig. 18

Monthwise Encephalitis Cases Recorded in Mahakali Zonal Hospital, Kanchanpur, Year of 2053 & 2054



4.3 Vector Responsible for JE

Rice field mosquitoes of the genus *Culex* were the main vectors transmitting the disease. Entomological studies were carried out during the outbreak. During the previous studies forty-one species of mosquitoes have been identified in the affected areas. These mosquitoes are generally feed on mammals and birds (zoophilic) but sometimes on humans when they do not find animals. Feeding time for the mosquitoes is generally the first hour after sunset. They remain infected with the virus during their whole lives. They breed mainly in irrigated rice fields but also other places like shallow ditches, ponds and pools. At least forty-one species of mosquitoes have been identified in the affected areas including the following main JE vectors (Pradhan 1981 and 1982, Regmi et. al. 1985) :

4.3.1 Vectors of Japanese Encephalitis Recorded in Nepal

At least forty-one species of mosquitoes have been identified in the affected areas including:

Culex bitaeniorhynchus
Culex fuscocephalus
Culex tritaeniorhynchus
Culex whitmorei
Anopheles hyrcanus
Mansonia group
Culex epidesmus
Culex gelidus
Culex vishnui complex
Aedes albopictus
Armigeres group

4.4 Animal Reservoir for JE

Animal and duck population for JE Virus Reservoir is presented in table 37 distributed in endemic districts of Nepal. The JE vector which is Culicine mosquitoe is a zoophilic mainly feeds on pigs, horses and birds, sometime large animals like cattle, buffalo, sheep and goat. In Nepal it has been observed and diagnosed by serologically of animals serum that pigs and ducks are the main reservoir for JE virus in Nepal. However, isolation of JE virus from the animals has not been yet carried out, but viremia in animals due to JE virus has been studied in the endemic areas like Sunsari and Morang districts (Joshi et. al. 1990, Sanyal et. al. 1979).

4.4.1 Pig, duck and horse population in Nepal

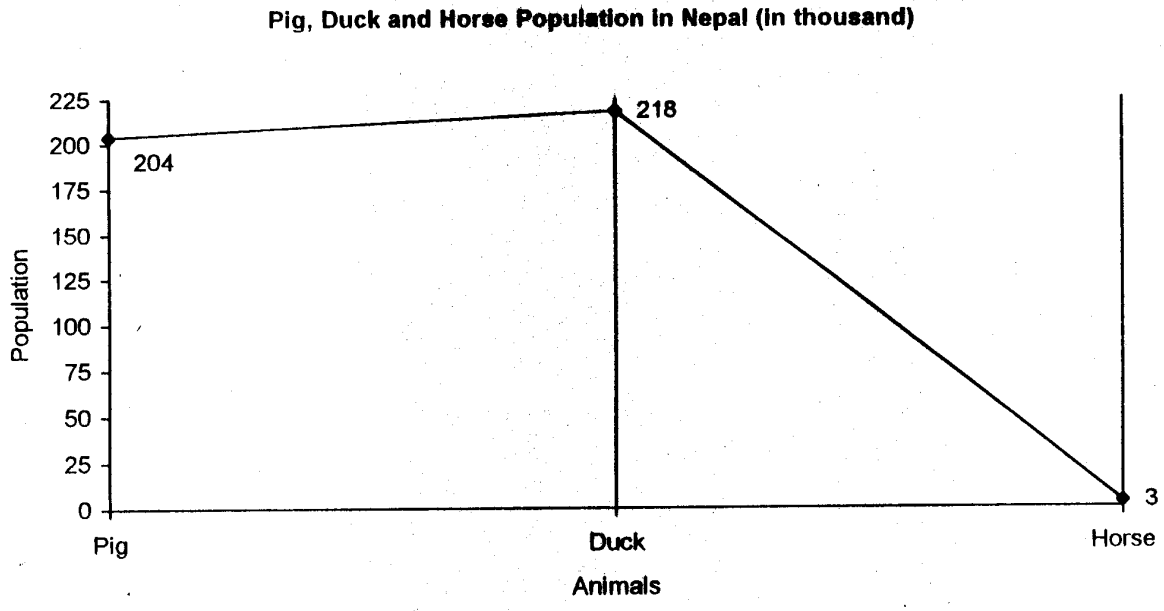
Pig, Duck and Horse Population Distribution in JE Endemic Districts of Nepal is presented in table 37 and fig. 19.

Table 37 : Pig, Duck and Horse Population Distribution in JE Endemic Districts of Nepal

S. N.	Name of the Districts	Pig		Duck		Horses	
		Total		Total		Total	
		No. of Holdings	No. of Head	No. of Holdings	No. of Head	No. of Holdings	No. of Head
1	Jhapa	9325	16074	5767	18038	56	56
2	Morang	13339	22929	9802	29531	86	86
3	Sunsari	2915	5025	4790	14816	880	1165
4	Udayapur	8484	12360	1865	4923	369	410
5	Saptari	455	1085	3886	10367	86	86
6	Siraha	199	896	364	1128	64	64
7	Dhanusa	560	560	350	701	59	74
8	Mahottari	454	1091	726	3033	50	50
9	Sarlahi	880	5719	1220	5276	60	60
10	Sindhuli	3165	6008	1854	5490	42	63
11	Ramechhap	3780	5609	947	1625	107	107
12	Rautahat	979	3688	3153	9328	55	74
13	Bara	652	2661	3144	12658	48	48
14	Parsa	354	2507	3604	15456	21	21
15	Chitwan	2048	3818	4924	16462	245	280
16	Nawalparasi	6246	21251	4757	14344		
17	Rupandehi	1421	3244	6090	24582	140	140
18	Kapilbastu	1345	3219	568	1979	151	151
19	Dang	10896	27274	1663	5684	68	68
20	Banke	1446	5285	501	1658	44	44
21	Bardiya	8077	15348	1733	6194	104	104
22	Surkhet	2423	4256	509	1446		
23	Kailali	13055	25674	3360	9812	29	29
24	Kanchanpur	4485	8768	1194	3254	56	56
	Total	96983	204349	66771	217785	2820	3236

Source : National Sample Census of Agriculture Nepal, 1991/92 District Summary, CBS, NPC. 1993.

Fig. 19



Pigs, Horses and Ducks Population in 75 Districts of Nepal is presented in table 38.

Table 38 : Pigs, Horses and Ducks Population in 75 Districts of Nepal

S. N.	Name of the Districts	Pigs		Horses		Ducks	
		Total		Total		Total	
		No. of Holdings	No. of Head	No. of Holdings	No. of Head	No. of Holdings	No. of Head
1.	Taplejung	12292	21220	56	56	531	1265
2.	Panchthar	17134	312290	86	86	780	1531
3.	Ilam	10580	15810	880	1165	1333	2734
4.	Jhapa	9325	16074	369	410	5767	18038
5.	Morang	13339	22929	86	86	9802	29531
6.	Sunsari	2915	5025	64	64	4790	14816
7.	Dhankuta	10717	19630	59	74	1034	2159
8.	Terhathum	6723	12243	50	50	676	1583
9.	Sankhuwasabha	10415	16727	60	60	956	2791
10.	Bhojpur	14524	23038	42	63	744	1210
11.	Solukhumbu	169	431	107	107	245	756
12.	Okhaldhunga	6214	10673	55	74	402	859
13.	Khotang	17012	26140	48	48	637	1578
14.	Udayapur	8484	12360	21	21	1865	4923
15.	Saptari	455	1085	245	280	3886	10367
16.	Siraha	199	896			364	1128
17.	Dhanusa	560	560	140	140	350	701
18.	Mahottari	454	1091	151	151	726	3033
19.	Sarlahi	880	5719	68	68	1220	5276
20.	Sindhuli	3165	6008	44	44	1854	5490

21.	Ramechhap	3780	5609	104	104	947	1625
22.	Dolakha	1832	2358			526	1191
23.	Sindhupalchok	1856	2798	29	29	884	2004
24.	Kavrepalanchok	2217	4744	56	56	589	1206
25.	Lalitpur	447	1297			669	3800
26.	Bhaktapur	159	1329			286	1234
27.	Kathmandu	419	805			643	4960
28.	Nuwakot	1070	1791			895	1913
29.	Rasuwa	5	16			179	516
30.	Dhading	3365	5344			1182	2597
31.	Makwanpur	457	538	54	54	698	1932
32.	Rautahat	979	3688	32	32	3153	9328
33.	Bara	652	2661			3144	12658
34.	Parsa	354	2507	20	20	3604	15456
35.	Chitwan	2048	3818			4924	16462
36.	Gorkha	3673	5110	121	292	705	1265
37.	Lamjung	1724	2611			452	1219
38.	Tanahu	10471	18350			1237	2905
39.	Syangja	8453	14325	55	55	713	1262
40.	Kaski	1588	3004	25	25	471	1117
41.	Manang			57	107	17	38
42.	Mustang	6	22	877	1683	12	45
43.	Myagdi			110	233	329	658
44.	Parbat	626	753	48	48	440	1486
45.	Baglung	999	1341			1313	3154
46.	Gulmi	2520	3660	30	30	450	750
47.	Palpa.	13945	26873	23	23	1218	3136
48.	Nawalparasi	6246	21251	33	33	4757	14344
49.	Rupandehi	1421	3244	109	109	6090	24582
50.	Kapilbastu	1345	3219	52	131	568	1979
51.	Arghakhanchi	425	619	77	77	154	349
52.	Pyuthan	1066	2558	92	92	682	1160
53.	Rolpa	2022	3142	232	232	463	597
54.	Rukum	2447	5037	177	372	389	709
55.	Salyan	1410	2242	270	270	506	850
56.	Dang	10896	27274	597	622	1663	5684
57.	Banke	1446	5285	39	39	501	1658
58.	Bardiya	8077	15348	51	85	1733	6194
59.	Surkhet	2423	4256	182	264	509	1446
60.	Dailekh	1058	1677			345	443
61.	Jajarkot			307	809	224	363
62.	Dolpa	12	16	768	1859	61	91
63.	Jumla	11	32	524	1164	203	416
64.	Kalikot	13	13	26	26	26	39
65.	Mugu	20	37	334	791	21	21
66.	Humla			397	672	83	92
67.	Bajura	14	714	114	271	257	514
68.	Bajhang	68	137	17	17	154	499
69.	Achham	81	373			347	479
70.	Doti	84	126			441	775
71.	Kailali	13055	25674	58	58	3360	9812
72.	Kanchanpur	4485	8768	74	92	1194	3254
73.	Dadeldhura	127	407	64	76	64	114
74.	Baitadi					23	47
75.	Darchula	12	48	168	312	60	108
	Total	267465	495798	9034	14311	92610	280305

Source : National Sample Census of Agriculture Nepal, 1991/92 District Summary, CBS, NPC. 1993.

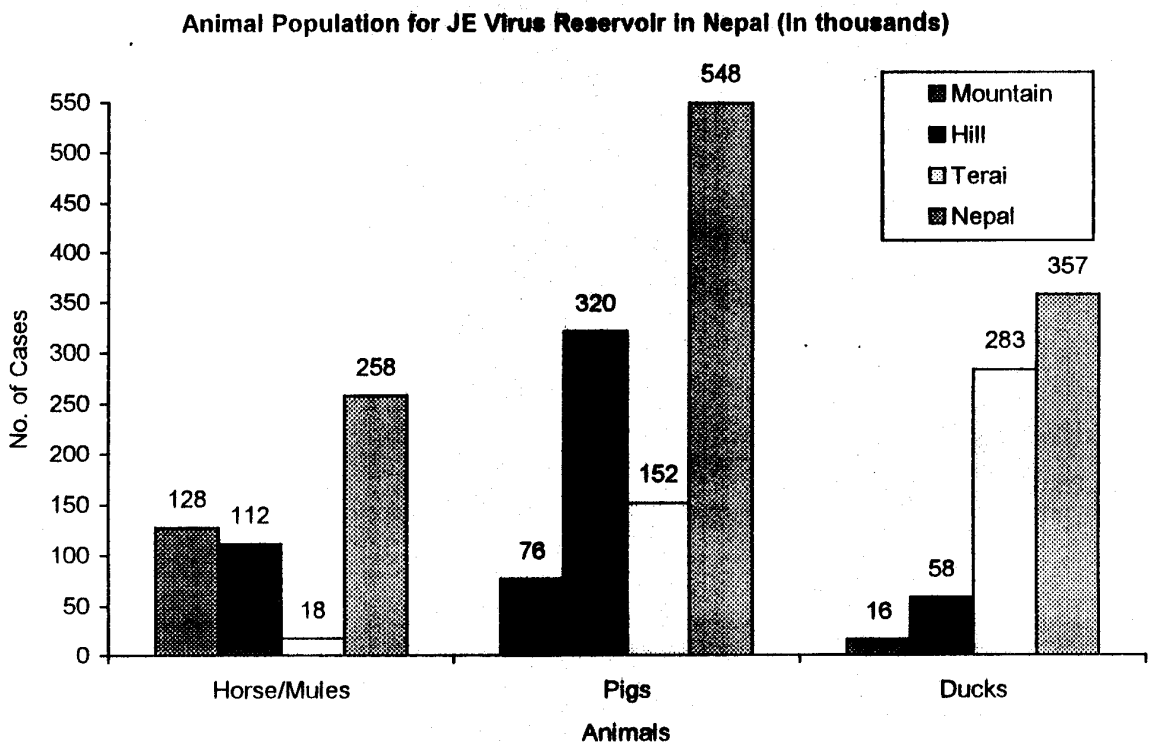
Animal Population for JE Virus Reservoir in Nepal (in thousands) is presented in table 39 and fig. 20.

Table 39 : Animal Population for JE Virus Reservoir in Nepal (in thousands)

Animal	Mountains	Hill	Terai	Nepal
Horse/Mules	128	112	18	258
Pigs	76	320	152	548
Ducks	16	58	283	357

Source: DFAMS and CBS

Fig. 20



5. Discussion

The first indication of JE transmission in Nepal was from northern India (Bihar, Uttar Pradesh and West Bengal states) where an apparent Japanese encephalitis outbreak was reported for the first time. Outbreaks recurred exclusively in south India from 1948 until 1978 (Sehgal, P.N. 1989 and Joshi 1981 and Khatri et al., 1981, Parajuli et. al, 1992).

This epidemiological surveillance study of Japanese encephalitis (JE) was conducted during 1996 and 1997 in all endemic areas of the country. In previous studies during 1990 - 1993 total number of cases was 357, 300, 537 and 203 during 2046, 2047, 2048 and 2049 B.S. (1989/1990-1992/1993) respectively. During this four year period 1058 (68.5%) of cases were in children under fourteen years of age. However there was no age or gender limitation in the incidence of this disease. The case fatality rates (CFR) in all age and gender groups were 36.0%, 38.0%, 35.2% and 31.7% during the epidemic years 2046, 2047, 2048 and 2049 B.S. (1989/1990-1992/1993) respectively. Seasonal peak of cases was seen during the months of Srawan through Kartik (July to October). Vector control measures have been used by spraying Malathion liquid (100%) with 50% diesel in most of the endemic and urban areas. No prevention and control measures of animal reservoirs like pigs and ducks have been applied. Health education and mass awareness campaign was started. The campaign was started by the Department of Health, local non-governmental organizations (NGO) and international non-governmental organizations(INGO). Vaccination in Nepal in the past has been limited in scope due to cost, logistics and lack of perception of need.

6. Conclusion :

Future Activities to be Carried Out for Japanese Encephalitis Control in Nepal

1. More and regular epidemiological surveillance
2. Isolation of indigenous Japanese encephalitis virus strains from human, vectors and animal reservoirs
3. Immunization against Japanese encephalitis in pigs and horses in endemic areas
4. Immunization against Japanese encephalitis in children below the age of five years of age in all endemic areas. The development of efficient, safe and appropriately priced alternatives to the commercially available vaccine should be given high priority (WHO position paper 1998)
5. More studies to know the bionomics and to control the vectors
6. Mass awareness and public education campaigns
7. Improvement of animal husbandry and rice cultivation
8. Improve hygiene and sanitation in and around rural and urban areas, housing complexes, roads, water supply, drainage, garbage disposal, ponds and toilets

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8. News Paper Cuttings

SUNDAY
DESPATCH
VOL.VII No. 17 KATHMANDU AUGUST11 - 17, 1996 (SHRAWAN 27-BHADRA 1, 2053) Rs.5

Is Kathmandu Inviting Deadly Diseases?

By Our Correspondent

THE CLIMATE of Kathmandu is changing and may be inviting diseases like encephalitis and malaria which previously were confined only to the Terai or places with hotter climates.

Last week, two doctors at Patan Hospital, Dr. Mark D. Zimmerman and Robert McN. Scott in a letter to The Rising Nepal disclosed the spread of Japanese encephalitis in certain areas of Kathmandu valley.

"We wrote that letter not to create any sort of panic, but only to inform the people and make them aware," Dr. Zimmerman told **Sunday Despatch**. "And it certainly does not mean that the cases will rise this year. It is too early and too premature to say that there will be any kind of outbreak," he emphasized.

Last year, in a short span of five weeks from August to October, 15 encephalitis patients were admitted to Patan Hospital. Eight of the 15 patients died and one patient was sent home in a coma. All the patients were from the southern parts of Patan, such as Bagdol, Bhainsepati, Anandban and Mahalaxmisthan.

According to Dr. Zimmerman, when a patient comes with the symptoms, the doctors can only guess. "But last year, when patients started coming in, we were intrigued and sent two samples of spinal fluid for laboratory tests to Bangkok. Our fear was confirmed," he said.

"We had not experienced such a large number in such a short period of time in the last five years," said Dr. Zimmerman.

"It was a small outbreak, but was confined to only a small part of the valley," added Dr. D.D. Joshi, an Epidemiologist and an expert on encephalitis.

Encephalitis, a viral disease which affects the brain cells, is spread by culex mosquitoes. And there is an intricate link between encephalitis and many mammals, mainly pigs and birds such as ducks. These animals act as the multiplying hosts to the virus. "Experiments in many countries have shown that the virus first entered the pigs and then from them into human beings," Dr. Zimmerman said.

When a carrier mosquito bites a pig or any of those hosts, the virus spreads and multiplies inside the body of the pig making it a sort of reservoir for the virus. Thus, when a mosquito bites the pig and then a human being, the virus is transferred to the human beings causing the disease.

Encephalitis was first reported in Nepal in 1978 by Dr. D.D. Joshi, mainly in the Terai regions. But it was only in 1994 that the disease was found in Kathmandu in six persons who had come from the Terai. But the situation could be changing. And the disease could be endemic here as well. According to Dr. Joshi, the main reason for the disease to come to Kathmandu could be that in 1994 when swine fever almost wiped out the pig population, pigs and swines were imported from the terai as well as from India. This might have been a possible route of entry into Kathmandu.

Tests have also shown that the virus has spread into the pig population of Kathmandu valley.

Contd. on page 2

Contd. from page 1

Is Kathmandu Inviting Deadly Diseases?

In 1978 there were 422 reported cases in the hospitals of Nepal, out of whom 119 people died. The largest number of cases were reported in 1980 when 231 people out of the 622 patients died. By 1984, out of 2,508 patients, 886 persons died of encephalitis.

Till now, no cases have been reported in Kathmandu. But there is a big chance of the disease spreading after the hot rainy season, i.e. from August through October.

One possible reason why the disease is not found during the hot summer months is because people tend to keep the mosquitoes away by using mosquito nets or mosquitocides.

"But," says Dr. Joshi," after the second monsoon i.e. after the rains of August-September (Shrawan -Bhadra), the number of mosquitoes increase dramatically, increasing the chance of the spread of the disease. And the puddles, stagnant water and garbage make excellent breeding grounds for the mosquitoes."

Pigs are good reservoirs of the encephalitis virus.

Because the disease is spread only by mosquito bite, one can protect oneself through simple preventive measures—by keeping the mosquitoes away

Doctors say if precaution can be taken for a few weeks during autumn, the threat can be subdued to a large extent.

Doctors emphasize that the worst part of the disease is that there is no anti-viral treatment. All that can be done is treat the patient.

"All we do is to give the patient saline water, nursing, maintain their blood pressure and give oxygen, if necessary, and hope that the patient will become well...but many die," Dr. Zimmerman said.

In many cases, the patients may also suffer from other diseases, such as pneumonia, urine infections and ulcer. Many of those who recover could suffer from long-term disabilities, such as paralysis, mental disorder and seizures.

Dr. Joshi blames the climatic change and the poor sanitary conditions for the spread of such diseases. Recently, in Patan Hospital, the lethal variety of malaria caused by Plasmodium falsiparum, was found in a patient from Dhading. So, it is not only encephalitis, but other diseases such as meningitis and even malaria which may have already set foot in Kathmandu.

अनुसन्धान केन्द्रको खाँचो

पूर्वाञ्चलको कोशी अञ्चल अस्पताल बिराटनगरमा अहिले इन्सेफलाइटिस भनिने मस्तिष्क ज्वरले १५ जना बिरामीको ज्यान लिइसकेको छ । गत असार महिनादेखि फाटफुट देखिन थालेको यस रोगको कारण ९० जना बिरामी अस्पताल भर्ना भएको देखिन्छ । खासगरी यो रोग पूर्वाञ्चल क्षेत्रमा बढी देखिन थालेको छ । ज्वर र बान्ता आउने, टाउको दुख्ने र छारे रोगको जस्तो लक्षण हुने इन्सेफलाइटिसका बिरामीलाई समयमा नै उपचार गर्न अस्पताल पुऱ्याउनु पर्ने सार्वजनिक चेतावनी चिकित्सकहरूबाट भएको छ । तर यो रोग लागिसकेपछि उपचारमा जोड दिनु भन्दा रोग लाग्नाका कारणहरू र त्यसको रोकथाम गर्ने सरल उपायहरू पनि बताइ दिनुपर्ने खाँचो छ । रोगका लक्षण थाहा पाए पछि २४ घण्टा भित्र अस्पताल पुऱ्याउन गरिएको चिकित्सकको आग्रहमा सबैले हेक्का राख्नु आवश्यक छ । त्यस्तै अर्को विचारणीय कुरा के देखिन्छ भने पूर्वाञ्चल क्षेत्रमा इन्सेफलाइटिसका बिरामी बढी पाइने भएकोले रोग निदानका लागि त्यस क्षेत्रमा छुट्टै इन्सेफलाइटिस अनुसन्धान केन्द्र स्थापना गरिनु पर्ने सुझाव अत्यन्त सामयिक देखिन्छ । इन्सेफलाइटिस अनुसन्धान केन्द्र संभवतः बिराटनगरमा स्थापना हुन सक्यो भने त्यो क्षेत्रका प्रायः सबै बिरामीलाई इन्सेफलाइटिस रोगबाट बचन्न तथा समयमा नै उपचार सुविधा पुऱ्याउन ठूलो महत पुग्ने देखिन्छ ।

कुनै बेला इन्सेफलाइटिस रोगका लक्षण देखिएको ठाउँमा स्वास्थ्य टोली पठाई रोगको अनुसन्धान गर्न जाँदा स्वास्थ्य टोलीले इन्सेफलाइटिसका बिरामीको घरमा सुंगुर-बंगुर पालेको, नपालेको हेर्ने र अनुसन्धान गर्ने गर्दथे । खासगरी त्यस्ता जनावर भएको घरमा गर्मी याममा लामखुट्टेले रोग सार्ने संभावना रहेकाले प्रत्येक घरका वरिपरी सरसफाइमा विशेष ध्यान दिन जोड दिइन्थ्यो । तर अहिले त्यस किसिमका स्वास्थ्य चेतनालाई ध्यान नपुऱ्याइदा रोग बढ्ने र फैलने चिताबनी दिने कार्य खास प्रभावकारी ढंगबाट भएको पाइँदैन । रोगका कारणहरूमा सबैभन्दा पहिले सर सफाई नहुनु नै हो भन्ने कुरा सर्वसाधारणमा सन्देश पुऱ्याउनु अनिवार्य छ । खासगरी महामारीका रूपमा देखिने रोगहरू प्रायः सबै नै फोहरका कारण फैलने कुरालाई सार्वजनिक संचार माध्यमहरूबाट घर-घरमा पुऱ्याउनु जरुरी छ । नेपालको भौगोलिक वातावरण अनुसार गर्मी मौसम लागे पछि प्रायः अधिराज्यभरी नै विभिन्न थरिका महामारी फैलने संभावना रहेकाले त्यस्ता रोग रोकथाम गर्न रोग लागि सके पछि दौडधुप शुरु गर्नु भन्दा रोग लाग्न नपाउने प्रतिरोधात्मक उपायहरू सबैतिर अवलम्बन गरिनु पर्दछ । नेपालमा परम्परागत रूपमा पाइने महामारी ल्याउने खालका रोगहरूमा आउँ, झाडा पखाला र इन्सेफलाईटिस लगायत हैजा पनि हो । यसपाली काठमाडौं उपत्यकाका विभिन्न ठाउँहरूमा ७० जना जति हैजाका बिरामीहरू भेटिएका छन् । तिनीहरूलाई समयमा नै रोग निदान र उपचारमा अस्पतालले दिएको सेवा सह्लहनीय छ । तर राजधानी बाहिर पनि त्यस खाले महामारीको रोग निदान गर्ने प्रयोगशाला (ल्याब) तथा अनुसन्धान केन्द्र स्थापना भई दियो भने सेवा र सुविधामा निश्चय नै प्रत्याभूति हुनु स्वाभाविक पनि हो ।

Encephalitis kills 201 this year

1996
NOV

By a Post Reporter

KATHMANDU, Nov 3- As encephalitis outbreak season has reached its end Epidemiology and Disease Control Division (EDCD) has assessed this year's incidence and fatalities nationwide from the mosquito borne disease.

At least 201 persons lost their lives from encephalitis this year till date out of one thousand one hundred and 11 reported cases from 24 districts, according to an EDCD preliminary report.

The worst hit districts were Bardia followed by Banke, Kailali, Jhapa, Sunsari and Morang. Bardia, a mid-western Terai district with the population of 324,552 suffered death of 24 persons due to encephalitis out of 122 cases, topping the list with the attack rate of 37.6 per 100,000 inhabitants. Next came Banke, another district of the region with a population of 318,397 in terms of attack rate per 100,000 inhabitants. Out of 98 cases of encephalitis in Banke, a total of 20 persons died.

Likewise, in Kailali 28 died, out of 156 encephalitis patients. Then came eastern Terai districts of Morang and Jhapa. At least 26 persons were recorded dead out of a total of 129 enoephalitis patients in Jhapa. In Morang, 20 persons died out of 154 cases. Jhapa and Morang have population of 631,372 and 721,824 respectively, two of the most densely populated districts. These two districts have 21.3 and 20.4 attack rate per 100,000 inhabitants respectively.

Sunsari, another eastern Terai district with a population of 505,318 recorded 15 fatalities out of 89 encephalitis patients.

In the western Terai district of Rupandehi, 11 persons out of 79 encephalitis patients died. Rupandehi has a total population of 573,356 and an attack rate of 13.8 per 100,000 inhabitants.

Other districts which recorded less than 9 attack rate per 100,000 inhabitants were Dhankuta, Saptari, Udayapur, Siraha, Dhanusha, Mahottari, Sarlahi, Sindhuli, Rautahat, Bara, Parsa, Chitwan, Nawalparasi, Kapilvastu, Dang, Shurkhet, and Kanchanpur.

In terms of development regions, eastern development region recorded 82 deaths with 453 encephalitis cases topping the fatality list. Then second came mid-western region with 62 deaths and 329 cases. Third came far west with a toll of 28 out of 160 cases. Western and central regions were least hit With a toll of 19 and 10 with the total cases of 103 and 66 respectively.

Compared to 1994 records, the toll is lower this year, says Gyanendra Nath Gongal, epidemiologist at EDCD. In 1994, a total of 244 persons died out of 1375 encephalitis cases. In 1995 and 1993 however the fatality was surprisingly low. Out of 772 and 112 cases, fatality was 126 and 16 in 1995 and 1993 respectively. The year 1986 witnessed the worst encephalitis toll since 1978 with a death toll of 415 out of 1615 cases.

Though long believed to be present in plains of Nepal, encephalitis was first scientifically noticed in 1978. The disease carried to humans from animals and birds like pigs and ducks by Culex mosquitoes has rapidly been increasing due to clearing of forest to get more land for paddy crops, increase in more waterlogged areas due to more dams and increase in pig population.

The disease takes epidemic proportion in the final weeks of monsoon from mid August to October.

Encephalitis claims 41

NEPALGUNJ, Oct 11 (RSS) - The death toll among viral encephalitis cases at local Bheri zonal hospital has reached 41 as of Thursday.

Out of the 261 cases brought to the hospital for treatment, 181 have been discharged after recovery while 33 others are still undergoing treatment. Mostly patients from Banke, Bardiya, Dang, Kailali and Kanchanpur districts in the mid-western and far-western region who become the victims of the viral encephalitis which almost assumes epidemic proportion during the summer months every year in Terai districts come for treatment at the Bheri zonal hospital.

Mostly the disease is found to be inflicting upon persons below 15 years and above 50 years, hospital chief Dr M Kidwai told RSS.

The hospital, in cooperation with various institutions and organizations, has been providing cost-free medicines to the patients.

According to Kidwai, generally a patient needs 8-10 days of treatment services which costs him Rs 700/- per day. It is said that nearly 4-5 patients come to the hospital daily for treatment services.

Experts caution against encephalitis outbreak

43

By Pradeep Silwal

KATHMANDU, Aug 9 - Kathmandu Valley residents have since long believed that encephalitis spreads only in terai and the Valley is immune from this disease. But time may have now come to change this belief.

The Valley's climatic disease conditions may be changing for the worse. Last year there was a minor outbreak of encephalitis in the valley during September and October.

Patan Hospital in Lalitpur received some 25 suspected cases of Japanese encephalitis during the two months of September and October last year. Out of the 25 patients 15 were clinically tested positive to Japanese encephalitis which is transmitted through mosquito bite, Dr Mark Zimmerman of Patan Hospital told *The Kathmandu Post.*

Out of the 15, eight patients died and one was in coma. Among the 15 patients 12 were from the areas lying in periphery of Ring Road such as Bagdol, Bhainsepati, Anandban, Thechu, Mahalaxmisthan, Jawalakhel and Lagankhel. Only one patient among the 12 had ever gone out of Kathmandu, Dr Zimmerman said.

Spinal fluid samples of the two suspected encephalitis patients sent to a Bangkok laboratory, AFRIMS, confirmed that they had Japanese encephalitis. The 15 patients suspected of encephalitis also had symptoms similar to those two patients whose spinal fluids had been tested by AFRIMS, proving that they also had the same disease. Also last year, outbreak of encephalitis was reported also in western, central and eastern terai districts.

In far western terai district of Kailali, 43 persons died of viral encephalitis since the second week of August last year. A total of 190 suspected cases had been brought to Seti Zonal Hospital at that time. 98 of them recovered after treatment.

Likewise in the mid-west terai, Lumbini Zonal Hospital in Butwal also recorded increase in encephalitis cases in the first week of September last year. Some 100 encephalitis patients were admitted to the Lumbini Zonal Hospital out of which nine died. A report last year said that the outbreak of encephalitis and meningitis in the terai districts was the worst after 1988. During the third week of August last year 11 encephalitis patients had been admitted in Janakpur hospital out of whom two died.

This year, however, Patan Hospital has not received any encephalitis cases. It's too early to predict if the cases would go up this year. "We advise all to take precautions against mosquitoes, especially during the months of September and October," Dr Zimmerman says. "No mass immunization against encephalitis is necessary in Kathmandu at present."

Culex mosquito bite transmits encephalitis virus to people from infected pigs. Sample survey done by AFRIMS from 1992 through 1994 revealed that the encephalitis virus were present on pigs in Kathmandu valley.

Culex mosquito is also found in Kathmandu valley according to Entomology section.

Dr B N Baidya of Communicable Disease Hospital in Teku said some sporadic cases of encephalitis were reported in his hospital last year, but no such cases have been found so far this year. "Japanese encephalitis and the encephalitis that hit terai area have similar symptoms but we lack the facility to confirm the disease type," he said.

The normal symptoms of Japanese encephalitis is fever and body pain. Sometimes a patient even gets well without treatment. But some patients affected by encephalitis may even suffer from paralysis, dumbness or coma.

D D Joshi of National Zoonosis and Food Hygiene Centre says mosquito population is increasing due to poor sanitation and unattended garbage disposal. Likewise, rising air temperature in Kathmandu is also a factor conducive to mosquito breeding. So is the situation of pigs, the carriers of encephalitis virus. "If encephalitis spreads in Kathmandu, there may be a major outbreak," cautions Joshi.

There is no reason to panic, however. It is only second week of August. But the most important thing is to protect oneself from mosquito bite; using net or spraying insecticide in puddles and clearing away dirty and stagnant water.

More on Japanese encephalitis, please

1996 Oct 29
Kathmandu

Sir,

I thank Dr Zimmerman for his letter which bought to our knowledge the spread of Japanese Encephalitis, a virus borne diseäse in Kathmandu Valley. The fact that this disease, so far confined to the terai regions, has found its way to the capital signals a clear warning. If, at this juncture, awareness drive and appropriate control measures aren't initiated by the Health Ministry, it may become as serious a problem as the Dengue fever is in Delhi.

As reported by Dr Zimmerman, Patan Hospital has already witnessed increased number of Encephalitis patients. The number can further multiply if the population remains ignorant about the presence of the Japanese Encephalitis in their vicinity and control measures are delayed. Knowledge about its mode of transmission, symptoms, preventive measures and its fatality rates are vital if we are to curtail its further spread.

Since every Kathmandu resident is vulnerable to mosquito bites, the call for extra precaution must be heeded.

Another alarming fact revealed in the letter was the confirmation of doctors in Bangkok about the spread of Japanese Encephalitis causing virus into the pig population of Kathmandu. This raises some serious questions. How safe is the pork available in Kathmandu? What is the risk involved in consuming infected pork.

Considering the limited knowledge we posses about the disease and the unseen risks we may all be exposed to, I implore Dr Zimmerman to kindly furnish answers to my above queries and provide information about the symptoms, effects and the fatality rates of Japanese Encephalitis. This will help Kathmandu residents by alerting them.

इन्सेफलाइटिसबाट ११५ जनाको मृत्यु

रोग खुट्याउने उपकरणको अभाव

गोरखापत्र समाचारदाता

काठमाडौं, असोज ६, गते । विगत केही दिनदेखि तराईका जिल्लाहरूमा फैलिएको इन्सेफलाइटिस रोगबाट एकसय पन्ध्रजनाको मृत्यु भइसकेको छ ।

गर्मीयाममा वर्षेनी प्रकोपको रूपमा देखिने इन्सेफलाइटिसबाट यो वर्ष झापा, मोरङ, सुनसरी, रुपन्देही र बाँके बढी मात्रामा प्रभावित रहेको छ ।

तराई क्षेत्रका विभिन्न १९ वटा अस्पतालमा आजसम्म उपचारका लागि आएका ६२४ जना इन्सेफलाइटिसका विरामीमध्ये नेपालगंजको अञ्चल अस्पतालमा २५ जना, बुटवल अस्पतालमा १३ जना, विराटनगर अञ्चल अस्पतालमा २१ जना र दमकको अस्पतालमा १६ जनाको मृत्यु भएको छ ।

अन्य विभिन्न अस्पतालमा गरी ४० जना मरेका छन् भने तीनसय जना उपचारपछि घर फर्केका र १४० जनाको उपचार भइरहेको कुरा इपिडेमोलोजी तथा रोग नियन्त्रण महाशाखाद्वारा आज आयोजित पत्रकार सम्मेलनमा जनाइएको छ ।

जापानीज इन्सेफलाइटिस भनिने यो रोग लामखुट्टेको टोकाइबाट मात्र मानिसमा लाग्ने तथा सर्ने गर्छ ।

शुरुमा बेस्सरी ज्वरो आउने, टाउको दुख्ने, बान्ता आउने, आलस तथा बेहोसीसमेत गराउने यसका शुरुका लक्षणहरूका आधारमा विरामीको उपचार हुने गरेको छ । रोग पत्ता लगाउने उपकरणहरू उपत्यकाबाहिर कहीं पनि नभएकोले लक्षणकै आधारमा उपचार गरिने गरेको र इन्सेफलाइटिसका लक्षण देखिनासाथ अस्पताल ल्याइएका विरामीहरू मर्ने संभावना कम रहेको बताएको छ ।

इन्सेफलाइटिस रोगको खास औषधि नभएको स्पष्ट गर्दै महाशाखाका प्रमुख डा. बेनुबहादुर कार्कीले तर हामीले उक्त रोगका लागि प्रयोग गर्ने गरेका औषधिहरू तराईका विभिन्न अस्पतालहरूमा रहेको कुरा बताउनुभयो ।

इन्सेफलाइटिसका भाइरस मानिसको शरीरमा दुई तीन दिनमात्र रहने र त्यसले मस्तिष्कमा सिधै प्रभाव पार्ने हुँदा उपचार गर्दा मस्तिष्कमा पर्ने चाप कम गर्ने, रक्तचाप, नाडीको गति र श्वासप्रश्वास सामान्य स्थितिमा संचालन गराउने गरिन्छ ।

इन्सेफलाइटिसका विरामीको उपचार गर्दा एक जना विरामीलाई रु. दश हजारसम्म लाग्ने गरेको र सबै व्यवस्था निःशुल्क भइरहेको पत्रकार सम्मेलनमा जानकारी गराइयो ।

लामखुट्टे नियन्त्रणका लागि जनचेतना जगाउन महाशाखाले प्रयास गरे तापनि कार्यान्वयन पक्ष प्रभावकारी नभएकोले इन्सेफलाइटिसको समस्या नियन्त्रण हुन नसकेको थाहा भएको छ ।

इन्सेफलाइटिसका विरामीहरू अधिकांश गरीब परिवारका रहेका छन्, जो आय आर्जनका लागि सुंगुर पाल्ने गर्दछन् । सुँगुर पालिएका ठाउँमा फोहर बढी हुने तथा सुँगुरलाई लामखुट्टेले टोकेपछि सुँगुरमा भाइरसको वृद्धि हुने भएकाले त्यस्ता क्षेत्रमा इन्सेफलाइटिसको संभावना बढी हुने गर्छ ।

त्यसैले सुँगुर पालनलाई शहरी क्षेत्रभन्दा बाहिर लैजानुपर्ने तथा घर वरिपरि पानी जम्न नदिई लामखुट्टे नियन्त्रण गरिनु जरूरी छ ।

पानी जम्ने ठाउँमा डढेको मोबिल ७० प्रतिशत, मट्टितेल २८ प्रतिशत र साबुनको मात्रा दुई प्रतिशत मिलाई छर्ने गरेमा पनि लामखुटेको प्रजननमा अवरोध बन्न गई नियन्त्रण हुने कुरा पत्रकार सम्मेलनमा बताइयो ।

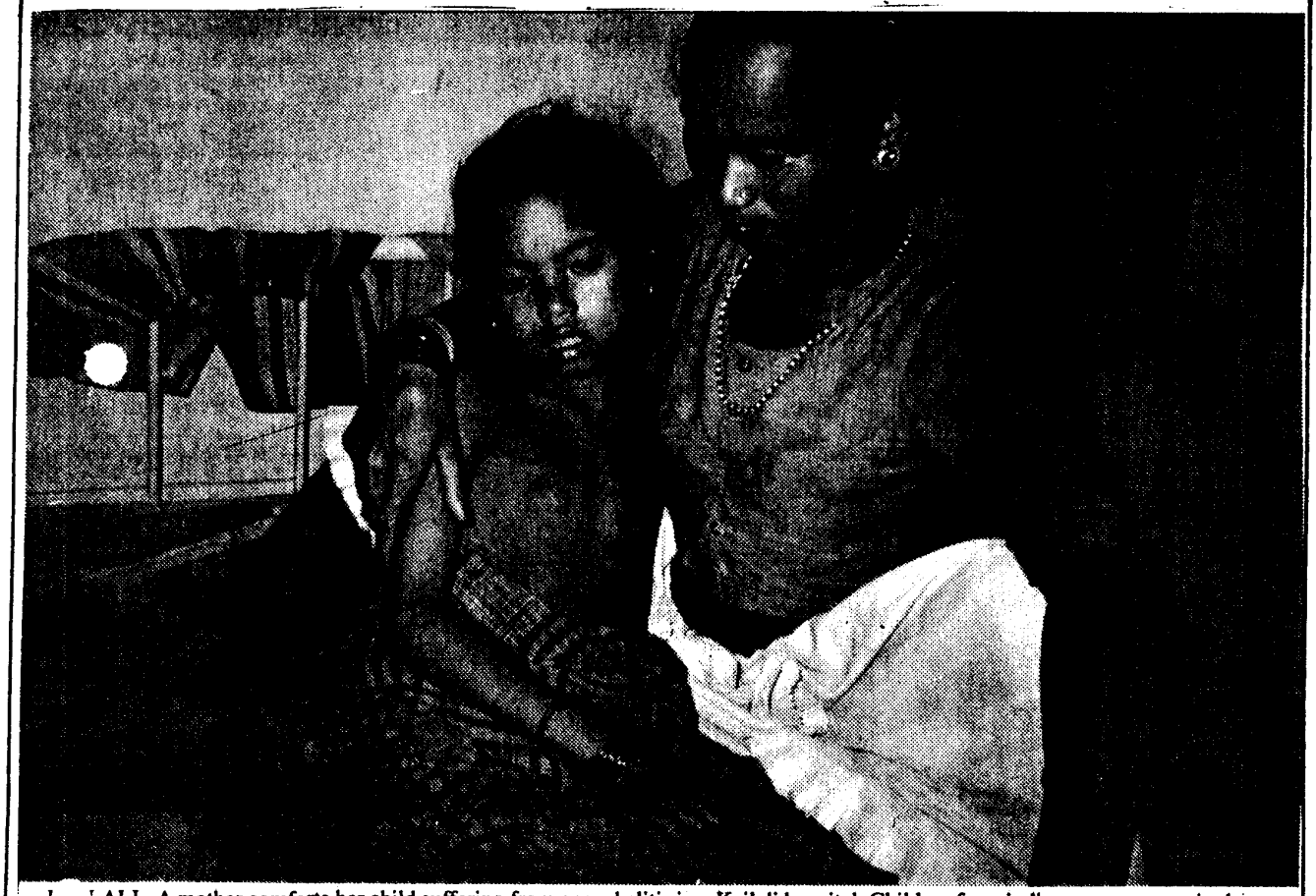
इन्सेफलाइटिसको एकमात्र माध्यम लामखुट्टेको टोकाइबाट बच्न झुल, मच्छरधुपका अतिरिक्त निम वा सर्स्यूको तेल शरीरमा घस्ने सल्लाह डाक्टरहरूको रहेको छ ।

काठमाडौं उपत्यकामा भने यस वर्ष इन्सेफलाइटिसका विरामी देखिएको जानकारी अस्पतालहरूले नदिए तापनि गत वर्ष भने पाटन अस्पतालमा त्यस्ता विरामी १५ जना उपचारका लागि आएका थिए ।

वि.सं. २०५१ सालमा अधिराज्यभर एक हजार ३७५ जना इन्सेफलाइटिसका रोगी उपचारका लागि आएकोमा २४४ जनाको मृत्यु भएको थियो भने गत वर्ष ७७२ विरामीमध्ये १२६ जनाको मृत्यु भएको थियो । इन्सेफलाइटिसका विरामीको मृत्युदर सामान्यतया ३० प्रतिशत हुने सैद्धान्तिक मान्यता रहेको र नेपालमा यो दर २० प्रतिशतभन्दा तल नै रहेकोले रोग निदानका लागि आवश्यक उपकरण नभए पनि लक्षणकै आधारमा गरिएको उपचार सन्तोषजनक रहेको बताइयो ।

इन्सेफलाइटिसका विरामीलाई उपचारको व्यवस्था भएन भने सामान्यतया विरामी पाँच दिन जतिमा मर्ने गर्छ भने बाँच्ने विरामी कसैलाई पक्षघात, स्मरणशक्ति गुम्नेजस्ता असर पर्ने गरेका छन् ।

Kathmandu Post



KAILALI - A mother comforts her child suffering from encephalitis in a Kailali hospital. Children from indigenous community have been most affected by the epidemic in this Far-west Terai district. *Post Photo*

Encephalitis kills 50 in Kailali

1997

By Narayan Wagle

TIKAPUR, Kailali, Sept 5 — Encephalitis has killed over 50 persons in farwestern Terai in the last few weeks, taking epidemic proportions. The district of Kailali, worst hit, has been struck by the terror of the killer disease.

The region's indigenous community, ever apprehensive during the late monsoon period, had never seen the epidemic take such frightening proportions as this year. Hospital and health posts in the district are in a total disarray as the number of patients catching the mosquito-transmitted disease mounts up. Many people have died at home and others while on their way to hospital. Most affected is the indigenous community. Among the dead were 15 persons being treated at Tikapur First Aid Centre while a number of others are being kept in the Centre corridor due to the lack of space.

Twelve persons have died in Dhangadi Hospital, which is literally choked with growing number of patients who have now been housed in temporary tents set up outside the hospital building.

Tikapur Hospital, with 16 beds, is currently treating some 60 patients a day. According to Dr Lumeshwor Acharya, the first case was reported in mid-Aug. "In two weeks, the disease has taken epidemic proportions." As the two hospitals in the district remain jam packed, some patients are now even travelling on to Nepalgunj, where most hospital beds are also occupied by encephalitis patients.

"We are getting 15-18 patients each day," said Assistant Health Worker Bhoj Raj Chaudhary. "The epidemic is not under control. It's taking serious proportions."

The disease has especially hit the backward Tharu families who are ever reluctant to seek aid from heath workers. "The poor families don't use mosquito nets," said Dr Bholaram Shrestha of Dhangadi hospital. "Most victims are children. Even when these people decide to come to hospital, it's only after they have tried traditional healers and the patient's conditions is critical." Some 90 percent of patients are from poor families, he pointed out.

Udaya Bhul, who "could not afford more than a single child due to poverty", lost his lone son. The resident of Pratappur VDC was a class nine student. The villager is shattered.

Women are another vulnerable group. "My wife is being treated for several days but there's no sign of recovery. We carried her to hospital on a cot which took us four hours," said Devi Lal Chaudhary. "I am finished. "We are poor people. We have already spent over 7,000 rupees." Like him several others have been in the hospital for days, cooking their own food, while keeping a day and night vigil to their dear ones.

(See *Kailali* page 8)

इन्सेफलाइटिसबाट करिब दुई सयको मृत्यु

०५४।६१२

हिमालय टाइम्स संवाददाता

नेपालगन्ज/धनगढी, असोज १ । मध्य तथा सुदुर पश्चिमका बाँके, बर्दिया, कैलाली, सुर्खेत र दाङ जिल्लाहरूमा महामारीको रूपमा फैलिएको इन्सेफलाइटिस रोगबाट लगभग दुई सयजनाको मृत्यु भइसकेको छ ।

कैलालीका टीकापुर, धनगढी, बर्दियाको गुलरिया, सुर्खेत र दाङका जिल्ला अस्पतालहरूमा सयभन्दा बढी व्यक्तिहरूको मृत्यु भएको कुरा उक्त अस्पतालहरूबाट थाहा भएको छ ।

यसै क्रममा स्वास्थ्यमन्त्री राधाकृष्ण मैनाली र विज्ञान तथा प्रविधिमन्त्री प्रेमबहादुर भण्डारीले बाँके, बर्दिया र कैलाली जिल्लाका अस्पतालहरूको आकस्मिक निरीक्षण गर्नुभयो ।

सांसदहरू सुनील भण्डारी र महेश्वर पाठक लगायतको उक्त टोली आज बिहान हेलिकप्टरबाट नेपालगन्ज पुगेको थियो । मन्त्रीहरूको सो टोलीले भेरी अञ्चल अस्पतालमा उपचारका लागि भर्ना गरिएका इन्सेफलाइटिसका रोगीहरूकों जानकारी लिएको थियो ।

सो अवसरमा भेरी अञ्चल अस्पतालका प्रमुख डा. एम. किदवाईले अस्पतालका समस्या र कठिनाइहरूबारे मन्त्रीलाई जानकारी गराउँदै यस अस्पताललाई क्षेत्रीय अस्पतालको स्वीकृत दिई दुई सय बेडको अस्पताल बनाउन माग गर्नुभयो ।

स्वास्थ्यमन्त्री राधाकृष्ण मैनालीले सो अवसरमा इन्सेफलाइटिसका रोगीहरूको उपचारका लागि श्री ५ को सरकारका तर्फबाट रु. ६ लाखको चेक र केही औषधीहरू अस्पतालप्रमुखलाई प्रदान गर्नुभएको थियो । यसअगि पनि सो अस्पताललाई रु. ३ लाख स्वास्थ्य मन्त्रालयले पठाएको थियो ।

अस्पतालप्रमुखको मागको जवाफमा स्वास्थ्यमन्त्री र विज्ञानमन्त्री दुवैले अस्पताललले २५ प्रतिशत जनसहयोग जुटाउन सके श्री ५ को सरकारले अस्पतालको माथिल्लो तलामा एउटा ठूलो हल बनाइदिने आश्वासन दिनुभयो ।

उक्त टोली आजै बर्दिया तथा कैलालीका टीकापुर र धनगढीस्थित अस्पतालहरूको निरीक्षण गरेर केही सहयोग प्रदान गर्नुका साथसाथै आवश्यक निर्देशन दिएर राजधानी फर्किएको छ ।

हालसम्म भेरी अञ्चल अस्पतालमा मात्र ५४१ जना इन्सेफलाइटिसका रोगीहरू उपचारका लागि आएकोमा ७० जनाको मृत्यु भएको, १३७ जनाको हाल उपचार भइरहेको तथा ३३४ जना निको भएर घर फर्किसकेको कुरा अस्पतालप्रमुखले बताउनुभयो ।

उहाँले विभिन्न ठाउँहरूबाट ६२ वटा अतिरिक्त खाटहरू मागेर अस्पतालमा राखिएको र तिनले पनि आवश्यकता पूरा नभएपछि माथि टेन्ट लगाएर बिरामी राख्ने व्यवस्था मिलाइएको कुरा पनि बताउनुभयो ।

अस्पतालमा दैनिक २० जनाभन्दा बढी रोगीहरू आउने गरेको बताउँदै उहाँले भेरी अञ्चल अस्पतालमा मात्र ७० जनाको मृत्यु भएको तथा कोहलपुर अस्पताल र नर्सिङ होममा पनि लगभग १५ जनाको मृत्यु भएको कुरा स्वीकार्नुभयो ।

श्री ५ को सरकारले दिएको रु. नौ लाखको अनुदानबाट आजभोलिकै संख्यामा बिरामीहरू आएमा आगामी दुई महिनासम्म औषधोपचार गराउन सकिने कुरा पनि डा. किदवाईले बताउनुभयो ।

हालसम्म नेपाल रेडक्रस सोसाइटी बाँके शाखामार्फत औषधीहरू वितरण भइरहेकोमा सो शाखामार्फत रु. तीन लाख १२ हजारको औषधी ४४१ जना रोगीहरूलाई वितरण गरिएकोमा २५६ जना निको भएर घर फर्किएको, ४८ जनाको मृत्यु भएको र केहीको उपचार भइरहेकोमा आजैबाट औषधीवितरणको जिम्मा पुनः अस्पताललाई दिइएको कुरा शाखाअधिकृत ईश्वरी रेग्मीले बताउनुभयो । सो रोगबाट ५ देखि १८ वर्षसम्मका २४७ जना प्रभावित भएकोमा सबभन्दा बढी बर्दिया र कैलालीका रोगीहरू रहेका छन् ।

यसैबीच धनगढीबाट प्राप्त समाचारअनुसार कैलाली जिल्लामा मात्र भदौ महिनाको पहिलो सातादेखि महामारीको रूपमा फैलिरहेको इन्सेफलाइटिस रोगबाट मृत्यु हुनेहरूको संख्या ७४ पुगेको छ । यस जिल्लाका अस्पतालहरूमा इन्सेफलाइटिसको प्रकोपबाट बिरामीहरूको संख्या दिनप्रतिदिन बढ्दै गइरहेको छ ।

विगत एक महिनामात्र कैलाली जिल्लामा ५६० जना उपचारार्थ स्थानीय अस्पतालमा भर्ना भएका थिए भने करिब ८७ जना नेपालगन्ज उपचारका लागि लगिएको कुरा बताइएको छ ।

सो रोगका ५६० बिरामीमध्ये १७१ जनाको उपचार भइरहेको छ भने ३०३ जना निको भई घर फर्किसकेका छन् । जिल्लाभरि १२ जनालाई बाहिर रिफर गरिएको कुरा जनस्वास्थ्य कार्यालयबाट थाहा भएको छ ।

यसैबीच कैलाली जिल्लामा व्यापक रूपमा फैलिरहेको इन्सेफलाइटिस रोगबाट स्थानीय अस्पताल तथा उपचार केन्द्रमा उपचारार्थ भर्ना भएका बिरामीहरूको अवस्थाबारे जानकारी लिन स्वास्थ्यमन्त्री राधाकृष्ण मैनाली आज यहाँ आइपुग्नुभयो ।

मन्त्री मैनालीले आजै हेलिकप्टरद्वारा कैलालीको टीकापुर स्वास्थ्य उपचार केन्द्र र भजनी उपचार केन्द्रको निरीक्षण गर्नुका साथै इन्सेफलाइटिसबाट पीडित बिरामी तथा उपचार केन्द्रको गतिविधिबारे जानकारी लिनुभयो ।

स्थानीय सेती अञ्चल अस्पतालका विभिन्न कक्षहरूको निरीक्षण गर्दै स्वास्थ्यमन्त्री मैनालीले कार्यरत डाक्टर एवं नर्सिङ स्टाफलाई बिरामीको उपचार सेवाको भावनाबाट निरन्तर गरिरहनुपर्ने सुझाव दिनुभयो । बिरामीलाई मन्त्री मैनालीले स्वास्थ्य-अवस्थाबारे सोधै सरकारले औषधीको कमी हुन नदिने दृढता व्यक्त गर्नुभयो ।

आजै मन्त्री मैनालीले टीकापुर स्वास्थ्योपचार केन्द्रलाई बिरामीको औषधोपचारका लागि दुई लाखको चेक तथा १७ हजार मूल्यबराबरको औषधी र भजनी स्वास्थ्योपचार केन्द्रलाई रु. एक लाखको चेक तथा औषधी हस्तान्तरण गर्नुभयो । यसैगरी मैनालीले सेती अञ्चल अस्पतालका मेडिकल सुपरिटेन्डेन्ट वृजनारायण चौधरीलाई रु. चार लाखको चेक तथा ८० हजार मूल्यबराबरको औषधी हस्तान्तरण गर्नुभयो । सो रकम हाल इन्सेफलाइटिस रोगका बिरामीहरूका लागि निःशुल्क औषधीको व्यवस्थाका लागि उपलब्ध गराइएको कुरा मेडिकल सुपरिटेन्डेन्टले बताएका छन् ।

स्वास्थ्यमन्त्रीसँगै विज्ञान तथा प्रविधिमन्त्री प्रेमबहादुर भण्डारी, सांसदहरू सुनील भण्डारी, महेश्वर पाठक, चक्रबहादुर डगौरा चौधरी तथा हिमाञ्चलराज भट्टराईले पनि अस्पतालको विद्यमान अवस्थाबारे जानकारी लिनुभएको थियो ।

स्वास्थ्यमन्त्रीलाई कालो झन्डा

धनगढी, असोज १ (हिटास) । इन्सेफलाइटिस-पीडितहरूको निरीक्षणका क्रममा आज यहाँ आइपुग्नुभएका स्वास्थ्यमन्त्री राधाकृष्ण मैनालीले अस्पतालमा उपचार गराइराखेका इन्सेफलाइटिस रोगका बिरामीहरूको अवस्थाबारे जानकारी लिइरहेको अवस्थामा त्यहाँ उपस्थित एक समूहले कालो झन्डा देखाई नाराबाजी गऱ्यो । बिरामीको चापलाई दृष्टिगत गरी स्वयंसेवकको रूपमा रहेको सो समूहले स्वास्थ्यमन्त्रीले ओपीडी कक्षको बाहिर राखिएका बिरामीहरूको निरीक्षण गर्ने क्रममा कालो झन्डा देखाएको थियो । सोही समयमा उक्त समूहले 'मेडिकल सुपरिटेन्डेन्टलाई सरुवा गर्, डाक्टरको उचित व्यवस्था गर्' भन्ने नारा पनि लगाएको थियो । मन्त्री मैनाली झोक्किएर बिरामीको बाईमा कालो झन्डा देखाई नाराबाजी गर्ने कुनै तरिका होइन भन्दै छुट्टै कुरा गरेर समाधान गर्न सकिने कुरा बताउनुभयो । 'अहिलेको अस्पतालको अवस्था हेरी तत्काल सबै समस्या निराकरण गरेर मात्र जानुस्' भन्ने उक्त समूहको दबाब थियो ।

Rising Nepal

Emerging zoonoses

By Francois-Xavier Meslin, Klaus Stohr, & P. Formenty

R.N. 24 Oct 97.

SEVERAL of the human pathogens which have emerged or reemerged worldwide in recent years are agents originating from animals or from products of animal origin. The animal species and the categories of agents differ widely. For instance, wild animals (bats, rodents) as well as draught animals (horses) and food animal (poultry, cattle) have been implicated in the epidemiological cycles of certain diseases, while the agents responsible for other new infections and diseases in human beings have included viruses, bacteria, especially enteric bacteria (salmonellae, Escherichia coli) and parasites (Cryptosporidium) of animal origin. Outbreaks of otherwise endemic zoonoses such as rabies, brucellosis, leptospirosis, anthrax and arbovirus infections involving production animals (Venezuelan equine encephalitis, Congo-Crimean haemorrhagic fever) have appeared in many developing countries in Africa, Asia and Latin America.

Suspicion

The zoonotic nature of some other important human diseases "potential zoonoses"-is suspected but not yet demonstrated. For example, the natural cycle of Ebola virus is not known and its reservoir (possibly an animal which plays an essential role in maintaining the agent and its life cycle) remains to be identified. On the other hand bovine spongiform encephalopathy (BSE), a fatal disease of cattle, is suspected although no scientific proof of a link yet exists--to be the origin of a new variant form of Creutzfeldt-Jakob disease (CJD) in human beings.

These potential zoonoses have recently had a considerable impact on public health and on animal production worldwide in view of the need to minimize the potential risks for human beings.

BSE first came to the attention of the scientific community in November 1986 with the appearance of a newly recognized form of neurological disease in cattle in the United Kingdom. Between November 1986 and 31 May 1996 about 160000 cases were confirmed recommendations designed to minimize risks for consumers in relation to food products of animal origin, and proposed a protocol for global surveillance of the new variant form of CJD.

In 1976 the Ebola virus attracted worldwide attention with outbreaks at Nzara, Sudan, with 284 cases and at Yambuku, Zaire, with 318 cases. In both instances there were very high mortality rates (53% in Sudan and 88% in Zaire). The first patients may have been in contact with infected animals or their products (bats or rodents in Sudan, meat from monkeys or wild antelopes in Zaire) but investigation of a possible animal reservoir remained inconclusive. Between 1977 and 1989 a few relatively small Ebola outbreaks were reported. Then in 1994 a Swiss ethologist became infected by a new Ebola variant after doing a on 33400 farms in the United Kingdom. Epidemiological studies suggested that the source was cattle feed prepared from the carcasses of ruminants such as sheep. Modifications of the physical conditions of the process use for preparing cattle feed introduced in 1981-82 may have created a risk factor by not eliminating the disease agent from the feed.

BSE is one of several different forms of transmissible brain disease of animals. A number of similar severe, and fatal, neurological human diseases are due to nonconventional agents. These include kuru, a disease transmitted by ritual handling of bodies and brains of the dead and identified in Papua New Guinea in the 1950s, and the various forms of CJD, which is a rare disease with a worldwide distribution.

When it was shown that these diseases (called transmissible spongiform encephalopathies) could be transmitted experimentally to a range of animals, WHO arranged four consultations between 1991 and 1995 to review the possible public health implications, with special emphasis on BSE. The sudden announcement by the United Kingdom in March 1996 that 10 people had been identified with what appeared to be a variant of CJD led to a fifth and then a sixth consultation at WHO since--although there was no direct evidence of a link--the most likely hypothesis was that these cases might be related to exposure to BSE. These consultations issued

postmortem on a chimpanzee originating from the Tai forest in Cote d' Ivoire. The chimpanzee proved to be infected with Ebola and a number of deaths reported among these animals in the same area were associated with this agent too. In January 1995 a new Ebola epidemic was reported in Kikwit, Zaire, with a total of 316 cases and 245 deaths. In January 1996, an outbreak occurred in Makokou, Gabon, with 37 cases and 21 deaths. In Gabon the investigation showed that most of the patients had been in contact with a dead chimpanzee which they had butchered.

Nothing definite is known about the reservoir of the Ebola virus, although a number of hypotheses have suggested that rodents or insects may be involved and even that the virus may be of plant origin. There is general agreement that the species of monkey and apes in which the virus strains have been isolated so far are only victims of the disease since, in view of the high mortality rates the infection causes, these groups of animals could not sustain themselves or the disease agent for very long. WHO has initiated a multidisciplinary study on mammals, birms and insects in the Tai forest of Coted d'Ivoire aimed at identifying the natural reservoir of the virus. The study involves scientists from Canada, France, Sweden, Switzerland, United Kingdom and USA. Identifying the reservoir is essential to understanding the mchanisms for transimission in nature and helping to pevent future Ebola outbreaks.

In both developing and developed countries, a number of zoonoses have emerged either as new pathological entities or as already known agents, appearing in areas or species where they had not been previously reported. The reasons for this increasing trend are complex but they include: Alteration of the environment, influencing the size and distribution of certain animal species, and the vectors and transmitters of infectious agents that affect human beings; increasing human populations, thus favouring an increased level of contact between humans and infected animals; industrialization of animal production; changes in food processing and consumer habits.

Reinforcement

As such problems are likely to continue, the surveillance of animal diseases and zoonoses will need to be reinforced and maintained at national and international levels. Further collaboration is essential between all professions involved in the development of food technology and control of the food industry in order to ensure that health risks in the food chain are minimized everywhere.

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कैलालीमा इन्सेफलाइटिसको महामारी, पचासौंको मृत्यु

नारायण वाग्ले फा.पु. ०५८।५।२९

टीकापुर, कैलाली, २० भदौ- सुदूर पश्चिमी तराईमा यसै महिनाको प्रारम्भदेखि फैलिएको इन्सेफलाइटिसको महामारीका कारण ५० जनाभन्दा बढीको अकाल मृत्यु भइसकेको छ भने महामारी दिन प्रतिदिन बढिरहेकाले कैलाली जिल्लाभरि भयको वातावरण सिर्जना भएको छ।

प्रायः हरेक वर्ष मध्य साउनदेखि भदौसम्म इन्सेफलाइटिसको प्रकोप सहँदै आएका कैलालीका आदिवासी थारूहरू यस वर्षको महामारीमा सबैभन्दा बढी भयभीत हुन पुगेका छन् भने जिल्लामा रहेका अस्पताल र स्वास्थ्य केन्द्रहरू बिरामीको उपचार नै गर्न नसक्ने गरी अव्यवस्थित हुन पुगेका छन्।

धेरै बिरामीहरू घरमै, कतिपय अस्पतालतिर लैजादालैजादै मरेका छन्, त्यस्ता मृतकको यकीन संख्या प्राप्त हुन सकेको छैन। प्रायः हरेक आदिवासीका गाउँमा यस्ता घटनाहरू दिनदिनै बढिरहेका छन्। अहिलेसम्म जिल्लामा ५० जनाभन्दा बढी महामारीकै कारण मरेको अनुमान गरिएको छ।

टीकापुर प्राथमिक स्वास्थ्य केन्द्र अस्पतालमा भर्ना भइसकेर पनि १५ जना इन्सेफलाइटिसका बिरामीले आफ्नो ज्यान गुमाइसकेका छन् भने भर्ना भएका बिरामीहरू पनि अस्पतालको बेड नपाई कोरिडरमै सुतेर उपचार गराइरहेका छन्।

उता धनगढी अस्पतालमा यसै सातामात्र उपचार गर्दागर्दै १२ जनाको मृत्यु भइसकेको छ। अस्पतालका सम्पूर्ण बेडमात्र होइन कोरिडरको खाली ठाउँसमेत भरिएर बिरामीहरूलाई अस्पतालको प्राङ्गणमा पाल टाँगेर राखिएको छ।

जम्मा १६ वटा बेड भएको टीकापुर अस्पतालमा अहिले दैनिक करिब ६० जना बिरामीको उपचार गर्नुपर्ने अवस्था रहेको छ। महिला र पुरुष वार्डहरू भरिएर बाहिर राखिएका बिरामीहरूलाई सुताउन पर्याप्त ठाउँसमेत छैन। अस्पतालका चिकित्सक डा. लुमेश्वर आचार्यका अनुसार, साउनको अन्त्यमा इन्सेफलाइटिसको 'केस रिपोर्टिङ' भएर यसले जिल्लाभरि दुई साताभित्रै महामारीको रूप लिएको छ।

जिल्लाका दुई अस्पताल भरिभराउ भइरहेका कारण कैलाली र निकटवर्ती बर्दियाका गाउँहरूबाट नेपालगन्ज अस्पतालमा समेत बिरामीहरू लैजाने गरिएको छ। उक्त अस्पतालमा समेत सम्पूर्ण बेड इन्सेफलाइटिसकै बिरामीहरूबाट भरिसकेको छ। त्यहाँका स्वास्थ्य सहायक (अहेव) भोजराज चौधरीका अनुसार, दैनिक १५ देखि १८ जनासम्म त्याइने गरेकाले बिरामी भर्ना गर्नसमेत कठिनाइ भइसकेको छ।

महामारी बढ्दै गएकाले धनगढी अस्पतालमा दैनिक पन्ध्र-बीस जना बिरामीहरू आउन थालेका छन्। बिरामीहरूको बढ्दो चापकै कारण केही दिनमै अस्पतालमा इन्सेफलाइटिसविरुद्धको औषधीको अभाव हुने जानकारी अस्पतालका चिकित्सक डा. मोलाराम श्रेष्ठ दिन्छन्।

महामारी विशेषतः विपन्न थारू परिवारहरूमा बढी फैलिएको छ। उनीहरू बिरामीलाई हम्मेसी अस्पताल नलैजाने कारणले पनि धेरै जनाको मृत्यु भएको छ।

डा. आचार्यका अनुसार, विपन्न समुदायमा झुलको व्यवस्था नहुने भएकाले

टीकापुर अस्पतालमा इन्सेफलाइटिसको उपचार गराइरहेका बिरामी। *तस्वीर : नारायण*

लामखुट्टेको अत्यधिक टोकाइबाट त्यस्ता परिवारका विशेषगरी बालबच्चाहरू महामारीको चापमा परेका पाइन्छन्। त्यस्तो समुदायमा कोही थला परेपछि पहिले धामी झाँक्रीबाट झारफुक गर्ने र बिरामी अति गम्भीर भएपछि मात्र अस्पताल ल्याउने हुनाले पनि बढीको ज्यान गएको अनुभव डा. आचार्य व्यक्त गर्छन्।

उनका अनुसार, ९० प्रतिशतभन्दा बढी बिरामीहरू गरीब परिवारबाट पाइएका छन्।

प्रतापपुर गाउँ विकास समिति, बंगालीपुरका विपन्न उदय भुलले सम्पत्ति थोरै भएका कारण एउटा छोरा हुनासाथ परिवार नियोजन गरेका थिए। उनको छोरा ९ कक्षामा पढ्दै थियो, तर छोरालाई महामारीबाट बचाउन नसकेपछि बाबु भुल अहिले बिह्वल भएका छन्।

महामारीको शिकार सबैभन्दा बढी केटाकेटी भएका छन्। चिकित्सकहरूका अनुसार, विपन्न थारू समुदायमा अत्यधिक सुँगुर पालिने, घर वरिपरि फोहोर वातावरण हुने हुनाले वर्षामा पानी परेर घाम लाग्नासाथ लामखुट्टेको उत्पादन तीव्र भएर जान्छ। गर्मीयाम भएकाले केटाकेटीहरू नाङ्गै घर वरिपरिका नाला, आहालतिर र सुँगुर डुल्ने नालातिर बढी माछा मार्ने भएकाले तिनलाई लामखुट्टेले आक्रमण गर्छ र तिनको मष्तिष्कमा ज्यादा प्रभाव पर्छ।

महामारीबाट बालबच्चामात्र होइन, महिलाहरू पनि प्रभावित छन्। चारबटा छोराछोरी भएकी बौनिया गाविस- ५ की पर्देशनी चौधरी टीकापुर अस्पतालमा १७ दिनदेखि उस्तै अवस्थामा छिन्, बल्लबल्ल उनको अलिअलि होश आउन थालेको छ। छैन।

महामारी लाग्ने बिरामी प्रायः बेहोश भैरहने, टाउको दुख्ने ज्वरो आउने, कोही चिच्याइरहने गर्छन्।

जिल्लामा प्रशस्त संख्यामा रहेका कमैया र बँधुवा मजदुरहरूलाई बढी आर्थिक असर परेको छ, उनीहरू कोही आफन्त अथवा आफै बिरामी परेमा अस्पताल लैजाने हिम्मत गर्न सक्दैनन्।

चिकित्सकहरूले विपन्न समुदायहरूमा सरसफाइका लागि जनचेतना बढाउन र तिनका घरपरिवारमा कीटनाशक औषधी छर्न तथा सके झुलको व्यवस्था गरिदिनुपर्ने सुझाव दिन्छन्।

तर यतिखेर वर्षाका कारण सडक र बाटोघाटो बिग्रेकाले बिरामीहरू अस्पताल ओसार्न नै कठिन परिरहेको छ। बिरामीलाई तिनका आफन्तहरू घण्टौं टाढादेखि खटिया, खटियाको झोङ्मा बिरामीलाई झुण्ड्याएर ओसार्ने गरेका दृश्य गाउँगाउँमा देखिन्छ।

इन्सेफलाइटिसबाट भेरी र सेतीमा हालसम्म एक सय ८३ को मृत्यु

कान्तिपुर संवाददाता ०४५।६।१०

काठमाडौं, ९ असोज- भेरि अञ्चल अस्पताल नेपालगञ्जमा उपचारको लागि आएका इन्सेफलाइटिसका रोगीहरूमध्ये मंगलबारसम्म मर्नेको संख्या ८९ जना पुगेको कुरा जिल्ला प्रहरी कार्यालय बाँकेबाट थाहा भएको छ ।

उक्त कार्यालयका अनुसार उचपारका लागि आएका कुल ६ सयं ४७ जनामध्ये हाल अस्पतालमा ९१ जनाको उपचार भइरहेको छ । अन्य ४ सय ६७ जना विरामीहरू अस्पतालबाट उपचारपश्चात् घर फर्केका छन् ।

यसैबीच जिल्ला प्रहरी कार्यालय कैलालीबाट प्राप्त अर्को समाचारअनुसार कैलाली जिल्लामा इन्सेफलाइटिस रोगबाट मंगलबारसम्म कुल ९४ जनाको मृत्यु भएको छ ।

यीमध्ये सेती अञ्चल अस्पताल धनगढीमा उपचार हुँदा हुँदै ५० जनाको मृत्यु भयो भने उक्त अस्पतालमा हाल ७९ जना यस्ता विरामीको उपचार भइरहेको छ । त्यसैगरी प्राथमिक स्वास्थ्य केन्द्र टीकापुरमा ३८ जना तथा प्राथमिक स्वास्थ्य चौकी भजनीमा ६ जना यस्ता विरामीको मृत्यु भएको छ । भजनी र टीकापुरमा हाल क्रमश: १२ जना र ३७ जना इन्सेफलाइटिसका रोगीको उपचार भइरहेको कुरा केन्द्रीय प्रहरी समाचार कक्षले जनाएको छ ।

मस्तिष्क ज्वरबाट ६३ जनाको मृत्यु

नेपालगञ्ज– मध्य तथा सुदूर पश्चिमाञ्चल क्षेत्रका केही भागहरूमा फैलिएको मस्तिष्क ज्वरबाट भदौ २९ गतेसम्म भेरी अञ्चल अस्पतालमा ६३ जनाको मृत्यु भइसकेको छ । भेरी अञ्चल अस्पतालका अनुसार अस्पतालमा उपचारार्थ आएका ४ सय ५० जनामध्ये २ सय ८१ जनाको उपचारपश्चात् घर फर्किसकेका छन्, १ सय ६ जनाको उपचार भइरहेको छ ।

गत वैशाख महिनादेखि फाटफुट रूपमा देखा परेको मस्तिष्क ज्वरले भदौ महिनासम्म महामारीको रूप लिएपछि दिनहुँ मस्तिष्क ज्वरबाट पीडित व्यक्तिहरू उपचारका लागि अस्पतालमा ओइरिन थालेका हुन् । रोगीहरूको बढ्दो चापका कारण हाल अस्पतालको शय्याहरू, बरन्डा (कोरिडोर) पनि मस्तिष्क ज्वर बिरामीहरूले ओगटेपछि मस्तिष्क ज्वरोका थप बिरामीहरूको उपचारका लागि अस्पतालको छतमा टेन्ट (पाल) को व्यवस्था गरिएको छ ।

कान्तिपुर
(हस्तलिखित) असोज २, ०४५

बाँकेमा इन्सेफलाइटिसबाट एक सय दुईको मृत्यु

कान्तिपुर समाचारदाता ०४५।६।१२

काठमाडौं, ११ असोज- बाँके जिल्लामा इन्सेफलाइटिस रोगबाट मर्नेको संख्या शुक्रबारसम्ममा १ सय २ पुगेको छ । उक्त रोगबाट ग्रस्त भएपछि उपचारार्थ भेरी अञ्चल अस्पताल नेपालगंज पुऱ्याइएका बिरामीहरूको सोही अस्पतालमा मृत्यु भएको थियो ।

उक्त अस्पतालमा कुल सात सय इन्सेफलाइटिसका रोगी उपचारका लागि आएका थिए । तीमध्ये ५ सय ५१ जना उपचारपछि घर फर्केका छन् । हाल उक्त अस्पतालमा ७७ जना यस्ता बिरामीको उपचार भइरहेको कुरा केन्द्रीय प्रहरी समाचार कक्षले जनाएको छ ।

इन्सेफलाइटसबाट

गो. प. ०४५।६।१३

डगौरा चौधरी, हिमाञ्चल भट्टराईका साथै स्वास्थ्य सेवा विभाग इपिडेमीयोलोजी प्रमुख वेनीबहादुर कार्की सहितको टोलीले हिजो मध्य पश्चिमाञ्चल र सुदूर पश्चिमाञ्चलका नेपालगंज अस्पताल, बर्दिया अस्पताल, टिकापुर स्वास्थ्य केन्द्र, भजनी स्वास्थ्य केन्द्र र धनगढी अस्पतालको निरीक्षण गर्दै इन्सेफ्लाइटीसका रोगीहरूको अवस्था र उपचारको अवलोकन गरी नपुग करीब रु. १ लाख ८० हजार मूल्य बराबरका औषधि ती ठाउँमा पुऱ्याइएको बताइएकोछ ।

साथै, औषधि किन्नका लागि नेपालगंज अस्पताललाई रु. छ लाख, बर्दिया अस्पताललाई रु. दुई लाख, टिकापुर स्वास्थ्य केन्द्रलाई रु. दुई लाख, भजनी स्वास्थ्य केन्द्रलाई रु. एक लाख र धनगढी अञ्चल अस्पताललाई रु. चार लाख गरी रु. १५ लाखको चेक स्वास्थ्य मन्त्रीले हस्तान्तरण गर्नुभयो । गगम

इन्सेफलाइटसबाट ९८ को मृत्यु

०४५।६।१८

कान्तिपुर कैलाली, ११ असोज (कास)- कैलाली जिल्लामा फैलिएको इन्सेफलाइटिस रोगको प्रकोपबाट मृत्यु हुनेको आइतबार बिहानसम्म ९८ जना पुगेको कुरा जिल्ला प्रहरी कार्यालय कैलालीले जनाएको छ ।

जिप्रकाका अनुसार ती रोगीमध्ये ५२ जनाको सेती अञ्चल अस्पताल धनगढीमा उपचार हुँदाहुँदै मृत्यु भएको थियो भने ४० जनाको प्राथमिक स्वास्थ्य केन्द्र टीकापुरमा तथा ६ जनाको प्राथमिक स्वास्थ्य चौकी भजनीमा उपचार हुँदाहुँदै मृत्यु भएको थियो । हाल यहाँ कुल १ सय ४ जना इन्सेफलाइटिसका रोगीहरूको उपचार भइरहेको छ ।

Encephalitis

Tribhuvan Nagar, Sept. 20 (RSS) R.N. 21 Sep 99

Three persons suffering from encephalitis and admitted at the local Mahendra Hospital for treatment have died so far while one person has died from snake-bite, according to hospital sources.

Of the three other encephalitis cases who are undergoing treatment at the hospital, the health condition of one is described as critical while the remaining two are said to be in a stable condition.

According to Dr. Himkar Gyawali, the condition of one person out of the three meningitis cases brought for treatment here is very serious.

Similarly one person coming at the hospital for treatment of snake-bite has died while three others have returned after treatment.

Rather than coming to hospital, most of the snake-bite cases are taken to village quack doctors and shamans for treatment and this may be one reason that the number of snake-bite cases at the hospital are very few.

Meanwhile, the municipal authorities and district health office have started spraying disinfectants and insecticides to control mosquitoes and it is believed that this measure will help bring encephalitis and meningitis under control.

Encephalitis

Damak, Aug. 25 (RSS): R.N.

Eleven persons have died of encephalitis and meningitis as of the other day, according to medical superintendent at Amda hospital Damak Dr. Shankar Prasad Hajurdar.

Out of 44 persons hospitalised including 27 local people and 17 Bhutanese refugees, seven Bhutanese and four locals have died. 29 of the patients have been discharged from the hospital after treatment.

Another three patients including a Bhutanese refugee are still undergoing treatment.

Encephalitis hits Kanchanpur

MAHENDRANAGAR, Oct 4 (RSS)- The number of people who have died of viral encephalitis in Kanchanpur district this week has reached seven.

The number of encephalitis cases turning up at Mahakali zonal hospital so far has reached 91 of which 58 have been discharged.

Meanwhile, financial assistance totalling Rs 170,538 has been provided to Mahakali zonal hospital by various organisations to help treat the encephalitis patients.

The district development committe has provided Rs 50,000, Mahendranagar Town Development Committee Rs 25,000, Nepal National Social Welfare Association Kanchanpur Rs 25,000, Save The Children Rs 50,000, the bus entrepreneurs committee Rs 11,000, Kanchanpur Chamber of Commerce and Industry Rs 10,000, Mahendranagar municipality Rs 10,000 and the construction entrepreneurs association Rs 2,000. The medical entrepreneurs association Kanchanpur and the Family Planning Association have provided medicine worth Rs 5,161 and Rs 13,377 respectively.

Encephalitis

Mahendranagar (Kanchanpur) (RSS): 16 Sep 99

Out of the 16 encephalitis patients who were brought for treatment at Mahakali zonal hospital, one has died, two have returned home after recovery while on has been taken to India, it is learnt from hospital sources.

The remaining 12 persons suffering from the malady are undergoing treatment at the hospital.

On an average, 2-3 encephalitis cases are brought to the hospital daily for treatment and the hospital has been providing free medicines to poor and helpless patients.

Encephalitis cases were reported here from the last week of August.

3 die of encephalitis

6 Aug 97 K.P.

By a Post Reporter

JHAPA, Aug. 5 - Three people have died here due to encephalitis which has been spreading here over the last few days.

According to Anda Hospital at Damak, four encephalitis patients are currently undergoing treatment at the hospital. A total of 19 patients have returned home after treatment while one patient was referred elsewhere as he could not be treated there.

Of the four patients currently undergoing treatment there, one is a local resident while three others are Bhutanese refugees.

Similarly, scattered cases of encephalitis are being brought to Mechi Hospital while the large number of patients brought to the hospital suffer from fever.

Encephalitis claims 11

Biratnagar, Aug. 27 (RSS):

Eleven out of 111 people admitted to Koshi Zonal Hospital for treatment of encephalitis have died as of Tuesday, it is stated by the hospital.

Seventy one of the patients have been discharged and another 29 are still undergoing treatment at the hospital, it is stated.

Cases of encephalitis started showing up at the hospital since mid-july and the number of cases spurted from towards the middle of August, it is learnt.

The patients are from Morang, Sunsari, Saptari and Udayapur districts.

Minimize casualty

The dreaded Japanese Encephalitis (JE), a mosquito borne epidemic that made its maiden appearance way back in the '70s has come back with a vengeance. What's worse is that 1997 has recorded the highest number of cases (2424) out of which 305 have already died. As the main characteristic of this rapidly spreading disease is that it lacks curative measures, only supportive therapy can be administered. This explains why precautionary measures are so important for saving the lives of people. But even in this direction, there is in no way the marked government passivity can be justified.

The clinical manifestation of JE is so grave that it creates a panic situation within the community. Almost 70 percent of the victims stand a high risk of getting paralysed or handicapped. Further still, the JE virus is capable of causing substantial fatality and can even lead to abortions and neonatal deaths. A patient is bound to die within nine days of the onset of infection if left uncared for. Hence any neglect may well lead to fatal consequences in a large scale.

Though the year 1978 witnessed the first outbreak of encephalitis in the Rupandehi district, it was as late as 1983 that the disease was identified as Japanese Encephalitis. Since then the disease has been resurfacing at regular intervals, especially in the plains and the Inner Terai regions of western Nepal such as Banke, Bardiya, Kailali, Dang, Pyuthan, Surkhet etc.

In one of their surveys, Japanese and Korean researchers concluded that Japanese Encephalitis peaks after every 10 to 12 years. This means that Nepal at present might well be facing an upsurge because 1986-87 was the last time this disease was at its peak. It may be recalled that the toll then stood at 415 lives. Since the alarm bells have already sounded, it's time the government took effective measures to contain the epidemic. Although anti-mosquito campaigns using pesticides have proved unsuccessful in the past, aerial or ground fogging with insecticides can be resorted to on an experimental basis. More still, all the affected areas should be brought under spray and Terai dwellers in particular should be asked to sleep indoors as a precautionary measure. As regards the Ministry of Health, merely standing a mute witness to this deadly disease will be tantamount to shunning its vital responsibility. It would be of greater use if the department encouraged research work. For this, enough budgetary allocations must be made available on top priority basis. Enough care to ward off this deadly menace must be taken.