

An Epidemiological Survey of Snake-bite Case in Dhanusha District

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Abstract :

An epidemiological study of snakebite poisoning was carried out during the year 1982 in Dhanusha district. Total cases admitted and treated in Janakpur Zonal Hospital in each five years period of time were 40, 39, 38, 60 and 49. Of which mortality was 5-7 in each year except in the year 1978/79. Summer time specially June, July, August and September months of the year is the high peak season of snakebites. Among treated cases more than 85% cases are from rural areas of Dhanusha and adjoining districts. Polyvalent anti-snakevenom is not easily available and is expensive for a small farmer to buy. There is an urgent need to develop a national programme on snakebite management for the whole country.

Introduction :

Dhanusha district is located in plain (Tarai) area of Janakpur zone Central Development Region. It is bordered in south with Bihar state of India, east with Siraha, west with Mahotari and north with Sindhuli districts of Nepal. Its total human population is 4,32,511. This district is marked by a warm tropical climate with rainfall range

of 2286 to 2540 mm. annually and temperature ranges 15° c. minimum to 40° c. maximum annually. The summer season extends from June to September and the winter from November to January.

Snakebite is a common problem particularly in tarai regions of Nepal. There are only few epidemiological studies on snakebite poisoning being carried out in this Himalayan Kingdom of Nepal (Joshi 1981). In one of epidemiological study the total snakebite poisoning cases recorded in Koshi, Sagarmatha, Narayani, Lumbini zonal and Dharan district hospitals were 132 of which 8 died during the fiscal year 2036/37 (Joshi 1982). Snakebite management cases attending in Bheri zonal Hospital, Nepalgunj during the fiscal year 1974/75 to 1978/79 (upto June) have been treated and recorded. Out of 60 total cases of snakebite poisoning reported to that hospital 10 showed evidence of poisoning (Shrestha 1979).

There are hardly any studies on species of snakes found in Nepal. According to Mr. Robar L. Fleming Jr. (Ret) there were 48 species collected and of which 8 were found to be poisonous. Among the poisonous snake reported and recorded are Cobra (*Naja naja*), king Cobra (*Ophiophagus hannah*), Krait (*Bungarus caeruleus*), Coral snake, Russell's viper (*Vipera russelli*), saw scale viper (*Echis cerinatus*), pit viper (*Trim. monticola*), and Green pit viper (*Trim. albelabris*). Pit and green pit viper and coral snake species are collected and reported in Kathmandu Valley also.

The significance of the snakebite problem in Dhanusha district is very important. Every year it has been reported that during summer time there is a high incidence of snakebite poisoning cases. But there is inadequate information on its epidemiology and management. So far no such epidemiological surveillance study of snakebite has been conducted in this district. There are no such reports of snakes found in this district. Therefore in order to review the epidemiology of snakebite and to assess the present status of the management and treatment of snakebite in this district, this epidemiological study was carried out.

Materials and Methods:

An epidemiological survey design was developed to review and assess the following points on snakebite poisoning cases in Dhanusha district particularly cases reported to the Janakpur Zonal Hospital.

- (a) morbidity and mortality pattern;
- (b) seasonal occurrence; and
- (c) present status of the management and treatment of snakebite cases.

A "monthly incidence of snakebite cases by age and sex" format and a investigation card on snakebite" were developed by Zoonotic Diseases Control Section Epidemiology and statistics Division, department of Health Services, HMG (see ESD/ZSDS/S-1 and ESD/ZDCS /S-2).

Result:

(a) Morbidity and mortality Pattern:

Snakebite treatment and mortality statistics of Janakpur Zonal Hospital for the period of five years from 2035 (1978/79) to 2039 (1982/83) were recorded and reported. All the patients reported to the hospital during these five years were admitted and treated. Total cases admitted and treated in each respective years were 40, 39, 38, 60 and 49. Of which mortality was none in the year 2035 BS. but during the other following years mortality was 6, 6, 7 and 5 cases respectively (see Table I).

(b) Seasonal Occurance

From this study it has been observed that the seasonal occurrence of snakebite cases are recorded more in summer time from April, May to September and October. This is because of high rise of temperature, monsoon rain, completion of snake hibernation period, time for farming operations like paddy plantation, wedding harvesting and storing of all summer crops. According to Figure I and II month of Srawan (July) is the high risk time of snakebites. Cases are recorded in all months except in the months of November and December in all five years period of time.

(c) Management and Treatment of Snakebite Cases:

More than 85% snakebite patients were from semi-urban and areas of Dhanusha district and also some cases from Sindhuli and Mahotari districts. Many snakebite cases are being treated by traditional healers with the help of Tantras-Mantras and by applying some herbal medicinal preparations along with ligature and incision. All admitted cases were being carefully assessed both by history and physical examination before the decision to give antivenom is made by a local physician. The following line of treatment is being practiced in Janakpur Zonal Hospital;

I) Polyvalent anti-snake serum is given by intravenous method along with normal saline solution which is produced by Haffkine Institute Bombay. This is the only specific cure for envenoming. The quantity of polyvalent antivenom used by this hospital during these five years time is mentioned in Table 2. The supply from department of Health Services is not enough to treat all the admitted snakebite patients. The cost of per ampoule ASV. is Rs. 60.00 which is expensive to most inhabitants of these area as they are farmers.

II) Antihistaminic drugs like Avil injection used to be prescribed and administered.

III) A.T.S. is being inoculated in some of the cases where there is severe wound.

IV) Corticosteroids and I. V. drips were also used commonly in most of the cases.

V) In most of the complicated cases antibiotic therapy like penicillin injection was also prescribed.

VI) Other symptomatic treatment like analgesic-paracetamol, dressing and bandage of wound along with antiseptic dressing powder and liquid are being practised and used in the hospital.

Discussion and Conclusion:

Snakebite incidence in Dhanusha shows high peak during the month of June, July, August, and September when there is high rise of temperature, peak rainfall and with high humidity. Snakebite morbidity and mortality is high and now it is an important health problem in Dhanusha District. Polyvalent AsV is not enough and should be supplied by department of Health regularly and particularly in the beginning of summer time.

Epidemiological studies should be conducted on regular basis and investigation card on snakebite supplied by the department to all hospitals must be filled up by medical practitioner.

Epidemiology of snakebite in South-East Asia Region is studied by Sawai in 1981. According to this study highest mortality rates of bites per 100,000 population recorded in the Philippines, Thailand, Burma, Sri Lanka and India were bites by the cobra and Russell's Vipers are predominant in number. An epidemiological survey of snakebite cases in India was carried out by Gaitonde et al in 1979 and assessed as great public health problem. A inter-country consultative meeting on snakebite management was organised by

WHO/SEARO in November 1981 with the specific objectives like: to review the epidemiology, management, guidelines for development of programmes and identify areas of research in snakebite treatment in the countries of this region. Since this meeting some epidemiological surveillance activities have now been started in the countries of this region.

However, the importance of snakebite as a health hazard in all districts of Nepal has not yet been recognized by the health authorities. Therefore there is an urgent need to develop a national programme on snakebite management.

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TABLE 1
Snakebite Treatment and Mortality Statistics of Janakpur Zonal Hospital.

Months/Years	1978/79		1979/80		1980/81		1981/82		1982/83	
	2035		2036		2037		2938		2039	
	T	D	T	D	T	D	T	D	T	D
Baikash (April)	2	-	4	1	8	1	6	-	9	1
Jestha (May)	6	-	8	1	5	-	6	-	9	2
Asadh (June)	7	-	3	-	7	3	8	2	8	1
Srawan (July)	11	-	12	3	3	-	15	3	8	-
Bhadra (August)	4	-	3	-	3	1	8	-	4	1
Aswin (September)	4	3	5	1	4	-	13	2	7	-
Kartik (October)	1	-	-	-	3	-	2	-	4	-
Mangsir (November)	3	-	1	-	-	-	2	-	-	-
Poush (December)	-	-	-	-	-	-	-	-	-	-
Magh (January)	-	-	-	-	-	-	-	-	1	-
Falgun (February)	-	-	1	-	1	-	-	-	1	-
Chaitra (March)	2	-	2	-	4	1	-	-	-	-
Total	40	3	39	6	38	6	60	7	51	5

NB:- T × Treated cases D = Death cases

TABLE 2

Quantity of Polyvalent Anti-Snake Venom used in Janakpur Zonal Hospital

Year	Polyvalent Asv Supplied by Dept. of Health (in ampoules)	P. Asv procured by patient party	Total P. Asv consumed ampoules	Cost of P. Asv in Rupees (Rs) 60/ampoule
2035 (1978/79)	25	55	80	4,800
2036 (1979/80)	25	60	85	5,100
2037 (1980/81)	30	75	105	6,300
2038 (1981/82)	30	70	100	6,000
2039 (1982/83)	40	100	140	8,400
Total	150	360	510	30,600

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FIGURE 1
SEASONAL OCCURENCE OF SNAKE-BITE CASES
During Three Years Period of Time

LEGEND

- 2035 (1978/79)
- + + + 2036 (1979/80)
- 2037 (1980/81)

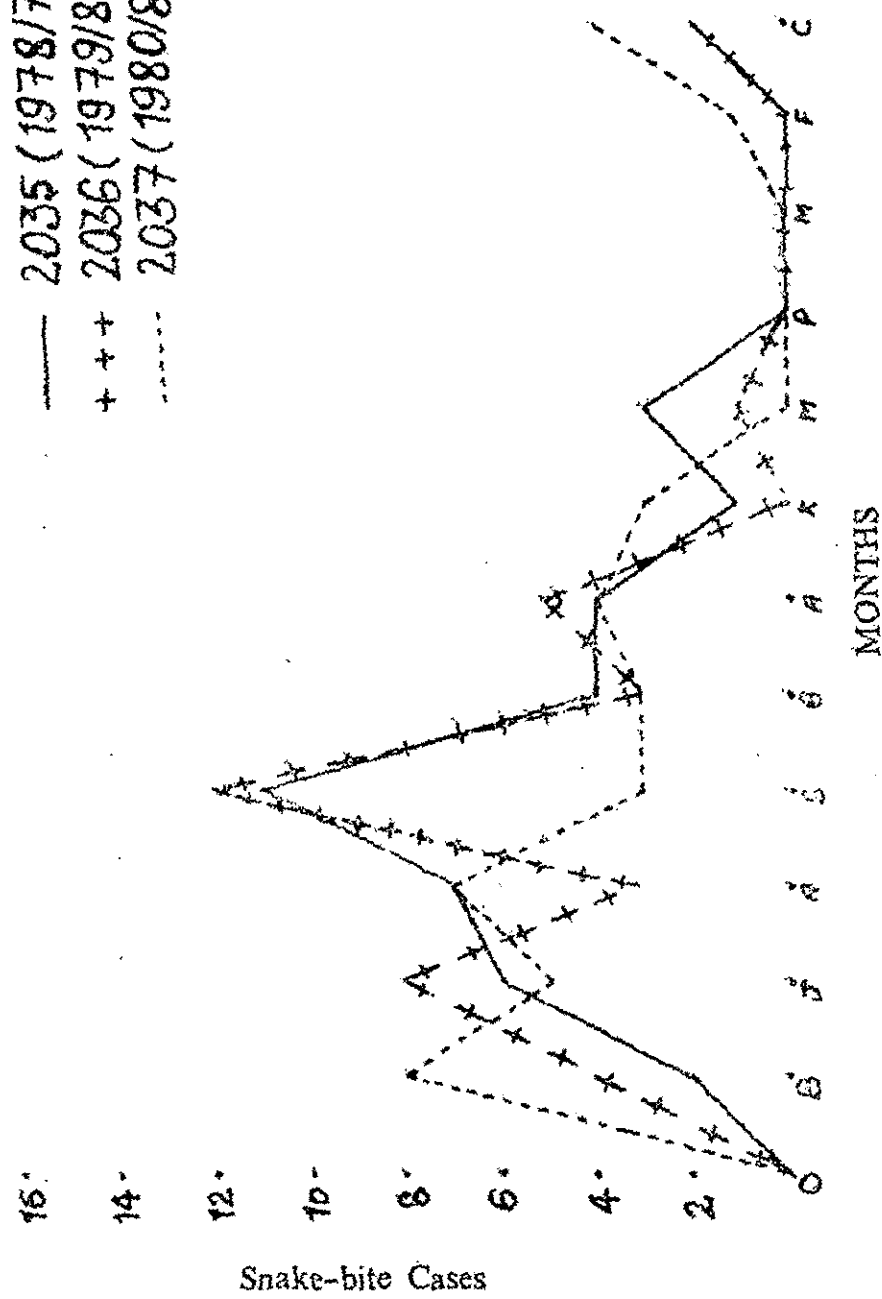
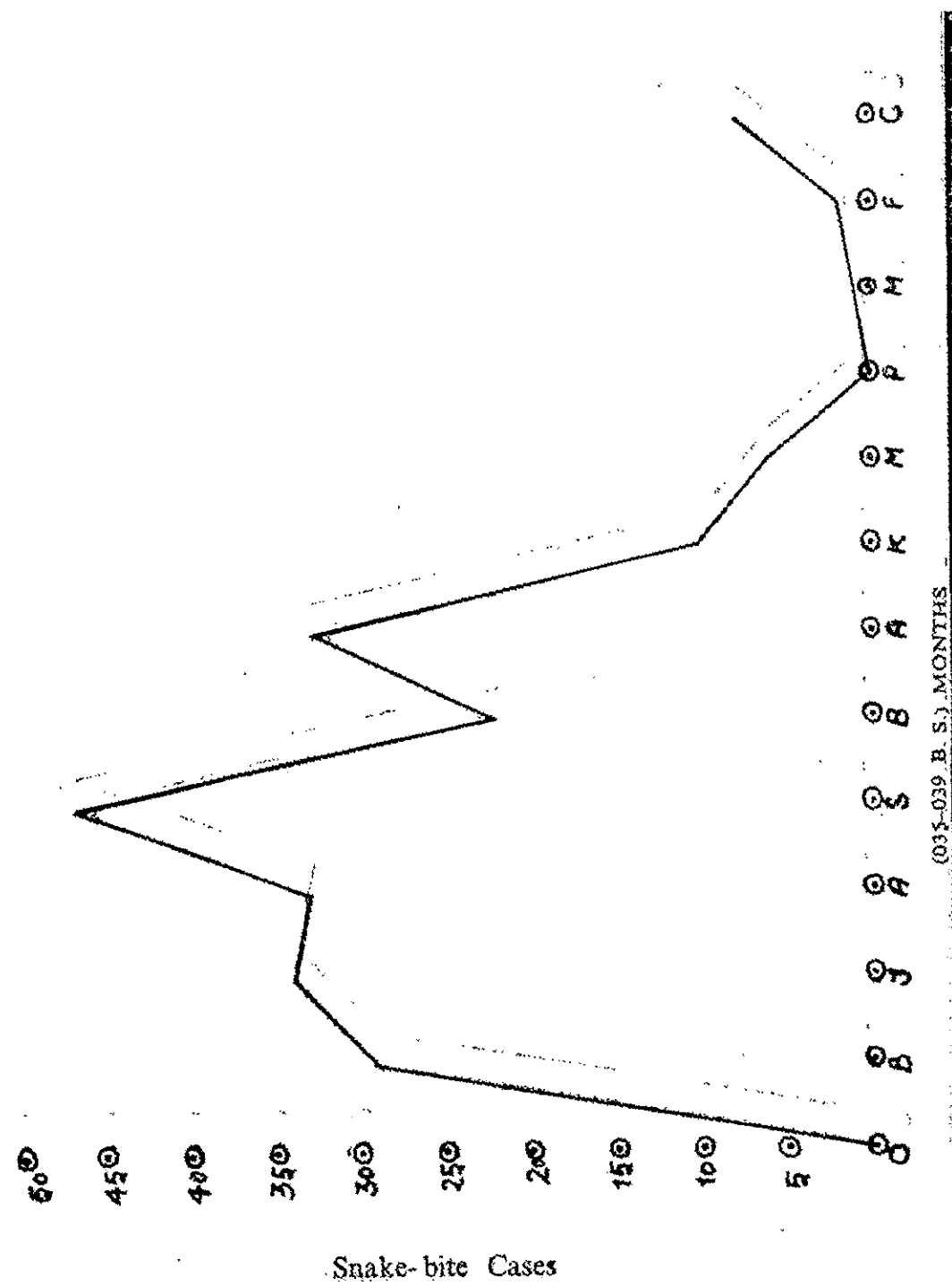


FIGURE II SEASONAL OCCURENCE OF SNAKE-BITE CASES
Occumulated Figure For The Period of Five Years



Zoonotic Diseases Control Section Epidemiology and Statistics Division

Department of Health Services Investigation Card On Snakebites

		Year	No.
		Districts:	
<u>Development Region:</u>	<u>Zone:</u>	<u>Hospital:</u>	<u>Doctor:</u>
Patient: Name	M/F Age		Race
Address (District)			
Snakebite (day/month/year/time):			
Admission date (day/month/year/time):			
Discharge date:			
Body Site of Bite:		No. of Fang Mark:	
Snake: Name		Location of Bite (home, field, road . . .)	
First Aid: Tourniquet		Others	
Symptom (Indicate intensity)			
Local:	Pain	Swelling	Hemorrhage
Systemic:	Pulse	Blood Pressure	Cellulitis.
	Conscious	Ptosis	Haemoptysis
	Unconscious	Salivation	Bleeding gum
	Giddy	Blurred vision	Ecchymosis
	Drowsy	Respiratory distress	Hematuria
	Restless	Paralysis of	oliguria

Slurred Speech		Anuria
Bleeding Time	Other Symptoms:	
Clotting Time:		
Blood Urine:		
Treatment : Antivenom, Name	Amount	Route
Inoision	,Fluid Transfusion	,Others
Prognosis ; Complete healing	,Motor Disturbance	
Death (day/month/time):		
Serum Sickness : (day/month)		
Symptoms : Urticaria	,Fever	Arthralgia
Lymphadenopathy		,Others
Treatment:		

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Monthly Incidence of Snakebite Case by Age & Sex

Institution :

For the year of

District :

Age group	Sex	January Magh C D	Febru- ary Falgun C D	March Chaitra C D	April Baisakh C D	May Jestha C D	June Asadh C D	July Srawan C D	August Bhadra C D	Septem- ber Ashwin C D	October Kartik C D	Novem- ber Mangsir C D	Decem- ber Poush C D	Total C D
Under one year	M F T													
1-4 year	M F T													
5-14 years	M F T													
15 Years and over	M F T													
Total	M F T													

NB: Month of Magh corresponds to Mid January-Mid February

C = Case, D = Death, M = Male, F = Female, T = Total.