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Changing Face of Epidemics of Bagalkot – The Role of GIS

Aim:- * To Study the prevalence of infectious diseases in backwater affected area of Bagalkot region.
* To determine the role of GIS in locating the intended regions.

Rationale:- The Bagalkot suburban town since past 3 years cherishing the fruitful outcomes of Almatti Dam Project. On the contrary is also witnessing

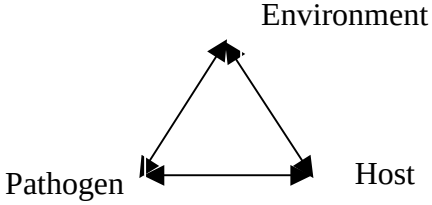
a gradual regional climatic subtle changes favouring the occurrence of several infections diseases. Thus affecting the health of living population.

The welknown GIS – Technology can be made use in identifying the prime geographical changes harbouring the vector associated diseases. Thus by enlarge to improve the quality of life of individual community as a whole.

The Bagalkot town with district status consisting of 6 talukas is located on river Ghataprabha. It is located at 16^0-12^0 north & longitude 74^0-45^0 north east and is at an altitude of 524 meters from mean sea level. The mean temperature is around 30-32^0C with average rainfall. The town constitutes population around 1,00,000.

Infection is defined as enlargement and multiplication of pathogen in living organism. This particular process requires the favourable and conducive circumstances within the body of both pathogen and host. The word virulence describes the ability of a pathogen invade and establish the disease, is affected by the factors like genome of the pathogen colonies and the favourable environmental conditions (aerobic or anaerobic) and finally natural physiological barriers offered by the host. i.e. human being. The latter factor is dependent on the genetic combination, immunity, general health and the socio-economic conditions. Example like contagious diseases are more observed in lower socio-economic strata.

As mentioned the environmental changes as a whole like temperature, humidity, floods, rainfall, drought and cyclones would alter in turn the living systems of both pathogen and the host. Thus it is worth recapitulating the concept of epidemiological triad.



The above figure shows the interrelationship association and balance among the three components. Any imbalance in these components would give rise to range of infections diseases.

Thus Bagalkot region since 3 years witnessing the climatic changes varying from subtle to prominent which are attributed to storage of backwater from Upper Krishna Project (UKP).

The Following table showing the causative pathogens of different infectious diseases.

Sl.No	Name of the diseases	Camsatine agents
1	Malaria	Plasmodium vivax, falciferum
2	Cholera	- Vibrio group
3	Gastro-enteritis	- E-Coli etc
4	Dysentery	- Entamoeba, E.kilbsiellae
5	Typhoid	- Salmonella typhi, paralyphoid
6	Diarrahorea	
7	Hepatitis	- Hepatic Virus A , B & D
8	Chicken pox	- Versilla Zester
9	TB	- Mycobactarium tuberculosis
10	Miscellaneous	- Animal bites.

Table 1

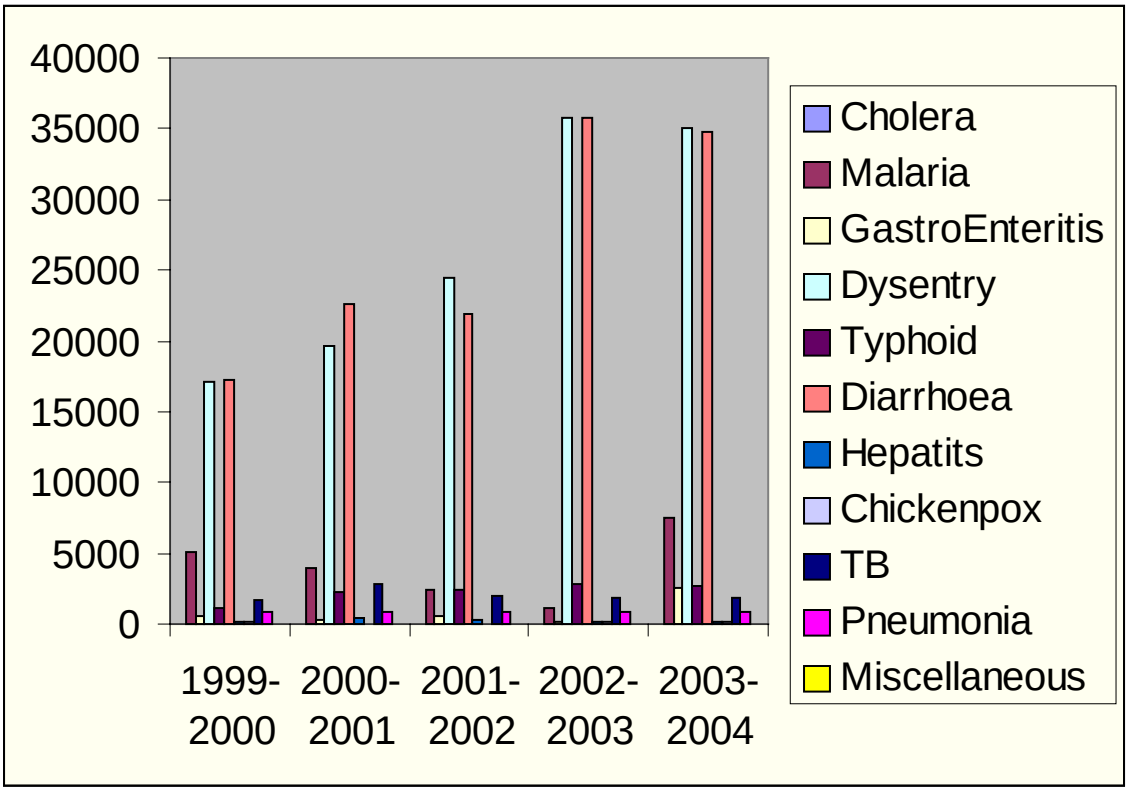
Material Method:

The Population included for this study consisted of both old and new bagalkot mainly considering the major impact of backwater on bagalkot town proper. Hence data regarding infectious diseases of this region were retrieved from the files of department epidemiology and communicable diseases, district health office, Bagalkot the obtained data is statistically analysed, interpreted as such in various tabular and graphical presentation an increased poverty due to submerged areas from Alamatti back water crowding and stress are increased the risk of diseases. The below table 2 shows the database analysis of infectious diseases year wise i.e. from 2000-2004 the cases reported with respect to diseases were processed through GIS system to HMIS of Karnataka Government every year. The method of GIS in locating the affected areas is successfully used. A database of different diseases in respective years is effectively used to study the health awareness in the rehabilitation centers and precautions to be taken by the health department and NGO's of Government of Karnataka.

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Cholera					
Malaria	**5110**	**4013**	**2454**	**1125**	**7557**
GastroEnteritis	**529**	**337**	**551**	**157**	**2600**

Dysentry	17118	19660	24444	35741	35000
Typhoid	1200	2230	2375	2776	2686
Diarrhoea	17308	22565	21872	35731	34729
Hepatits	172	375	315	162	150
Chickenpox	106	58	62	101	87
TB	1656	2885	2021	1793	1810
Pneumonia	892	890	829	880	860
Miscellaneous					

Table2



Results :

From the above table 2 it is evident that the occurrence of diseases have been increasing since the year of back water storage. For example

a)Dysentery : Observed in the year 2000 is 17118 which gradually increased to 19660. but drastically increased in the year 2003 and 2004 i.e. 2003 - 35741
2004 – 35000

b)Diarrhoea: Observed in the year 2000 is 17308 which gradually increased to 22565 in 2001 but significantly increased in the years 2003 and 2004 through 2002 i.e. 2003 – 35731
2004 – 34729

c)Typhoid: Observed in the year 2000 is 1200 which gradually increased to 2230.but significantly increased in the years 2003 and 2004 through 2002
i.e. 2003 – 2776
2004 – 2686

All these infectious diseases are not only due to the contamination of water but also due to the root of pathogen transmission which is dependent on living and sanitary & hygienic conditions. So this clearly indicates that shift to the right has taken from the year 2002 till 2004 . So which can be correlated with change and influence of climatic variations of back water. Although exact quantitative data is not available, the opinion of all non government health settings that there is dramatic rise in the various dreadful bites like snake and scorpion bites compared to the previous year of storage of back water. Again such a worrisome change may be is due to a definite variation in the regional climate favouring the inhabitation of these poisonous snakes and scorpions.

Conclusion :

- This preliminary study shows increase in the various infectious diseases in bagalkot region in relating to back water.
- Use of GIS is very much efficient method in analysing epidemiological data's effectively, confidentially to plan the health programmes for the implementation.
- **Scope :** In future epidemiological studies should be taken up using GIS in this bagalkot region involving Government & Non – Governmental clinical setups so as to improve the quality of life of the population of this region.