
**ASSOCIATION BETWEEN AGE-GROUPS, SEX AND JAPANESE
ENCEPHALITIS CASES**

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ABSTRACT

Japanese Encephalitis (JE) an important disease of viral origin has attracted the attention of public health specialists in South East Asia Regions especially in the BBIN (Bangladesh Bhutan, India & Nepal) countries due to its endemicity, high case fatality rate (CFR) and residual problems among survivors. JE has been occurring in the endemic form since long back particularly in northern states of India. Maximum number of JE cases occurred in 2005 as per records. So we have chosen year 2005 for analysis of age and sex distribution of JE cases and their association. So we divided ages in four age groups 0-4, 5-9, 10-14, 15 & above; these age groups are associated with JE cases (survive & deaths) in different districts in U.P. In this paper, it is tested whether age groups and consequences of JE attacks are associated or not as per given records.

Introduction:

JE has been occurring in the endemic form since long back particularly in northern states of India. Eastern parts of U.P. particularly Gorakhpur division is the worst hit division of Uttar Pradesh (UP) in India. U.P. alone is reporting nearly half of the cases found in whole India. So, we have taken seven districts for data analysis viz Gorakhpur, Mharajganj, Kushinagar, Deoria, Basti, Siddhartha Nagar and Sant Kabir Nagar in U.P. Though it is evident that age groups and sex have its impact on death or survival of JE cases; in many cases no evidence was found to be statistically strong. This may be due to limitation of the statistic used for testing the hypothesis. A deeper and more sensitive analysis is required to be carried out as it is found that a specific age group and sex seems to be more affected by the consequence through previous records consistently barring a few exceptions.

Material and Methods:

We have taken 7 districts in Gorakhpur, Mharajganj, Kusunagar, Deoria, Basti, Siddhartha Nagar & Sant Kabir Nagar U.P. in year 2005 which were worst affected by JE .In each district, we find out the association between different age groups and JE Effect (survive & deaths).We collected JE cases and deaths data in different age group in different districts in year 2005 from Pariwar Kalyaan Vibhag, Lucknow.

Data Analysis:

The data analysis was done for seven districts viz Gorakhpur, Mharajganj, Kushinagar, Deoria, Basti, Siddhartha Nagar and Sant Kabir Nagar in U.P.Though it is evident that age groups and sex have its impact on death or survival of JE cases; in many cases no evidence was found to be statistically strong. This may be due to limitation of the statistic used for testing the hypothesis.

The hypothesis in respect of Age-groups i.e. H_0 : Age groups and deaths due to JE are independent. All calculated values shown table 1:

Table:1

Districts	Calculated value (χ^2)	Tabulated value (χ^2) (at 5% level of significance)	Significance
Gorakhpur	0.91	7.81	Accept
Mharajganj	1.11	7.81	Accept
Kushinagar	1.18	7.81	Accept
Deoria	7.35	7.81	Accept
Basti	4.90	7.81	Accept
Siddhartha Nagar	5.88	7.81	Accept
Sant Kabir Nagar	8.88	7.81	Reject

Here, we accept the null hypothesis that means different age groups are independent with JE cases (survive & deaths) in 6 districts (Gorakhpur, Mharajganj, Kushinagar, Deoria, Basti, Siddhartha Nagar) in Uttar Pradesh meaning that we have no evidence to say that any particular age group is more or less prone to death after being attacked by the disease. So we may say that all affected age groups have same risk as far as death is concerned.

we reject the null hypothesis that means different age groups are independent with JE cases (survive & deaths) in Sant Kabir Nagar meaning that we have evidence to say that any particular age group is more or less prone to death after being attacked by the disease. So we may say that all affected age groups have not same risk as far as death is concerned.

Figure 1.1

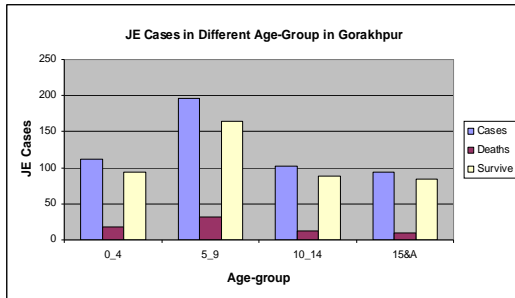


Figure 1.2

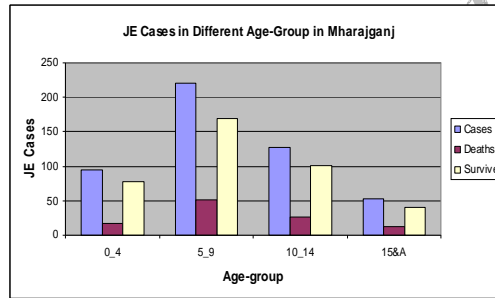


Figure 1.3

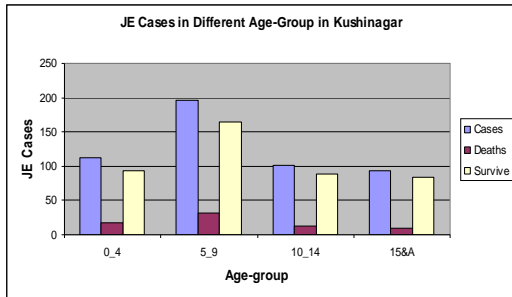


Figure 1.4

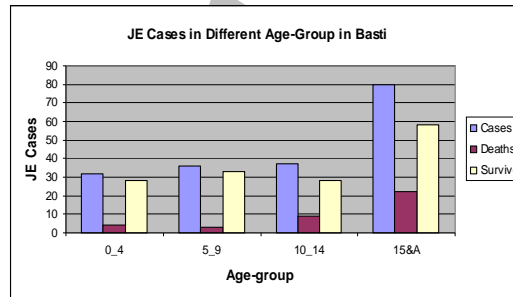


Figure 1.5

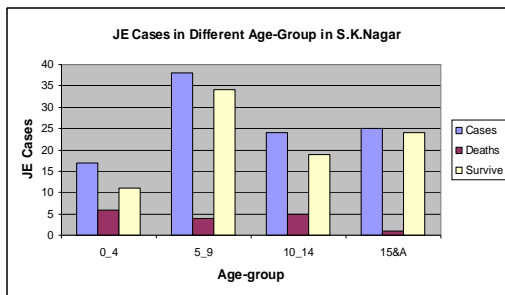


Figure 1.6

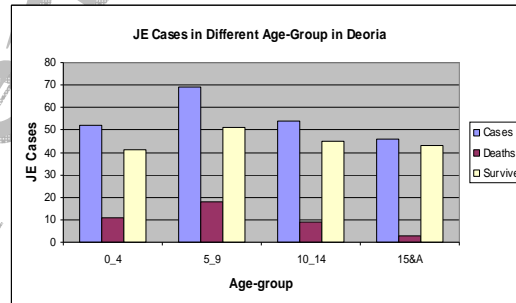
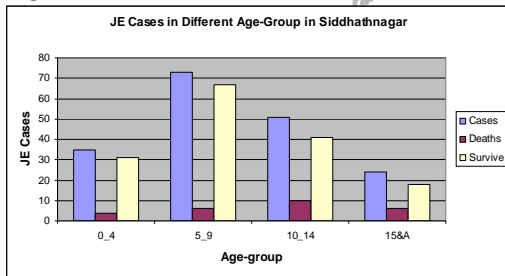


Figure 1.7



By these diagrams it is clear that more than JE cases affects in 5 to 9 age group.

Now, next hypothesis in respect of Sex i.e. H_0 : Sex and deaths due to JE are independent.

Calculated data shown in table 2:

Table:2

Districts	Calculated value (χ^2)	Tabulated value (χ^2) (at 5% level of significance)	Significance
Gorakhpur	0.00029	3.84	Accept
Mharajganj	1.15	3.84	Accept
Kushinagar	0.0646	3.84	Accept
Deoria	.0773	3.84	Accept
Basti	0.82	3.84	Accept
Siddhartha Nagar	0.699	3.84	Accept
Sant Kabir Nagar	0.1472	3.84	Accept

Here, we accept the null hypothesis that means a consequence of JE in terms of death or survival is independent of sex (Male and Female) in 7 districts (Gorakhpur, Mharajganj, Kushinagar, Deoria, Basti, Siddhartha Nagar, Sant Kabir Nagar) in Uttar Pradesh.

Figure 2.1

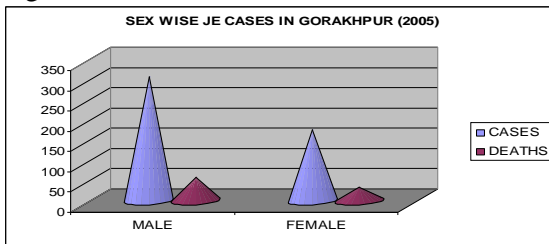


Figure 2.2

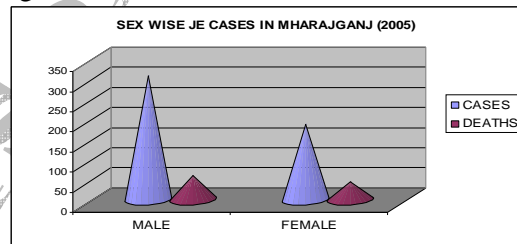


Figure 2.3

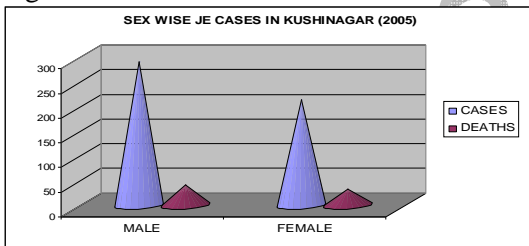


Figure 2.4

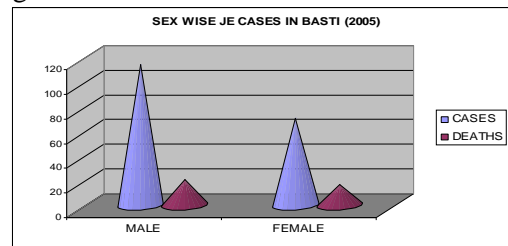


Figure 2.5

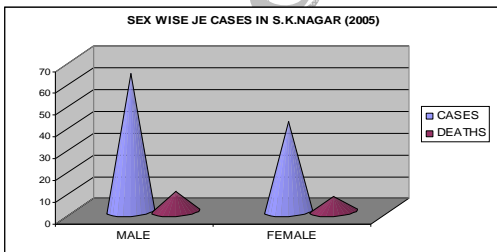


Figure 2.6

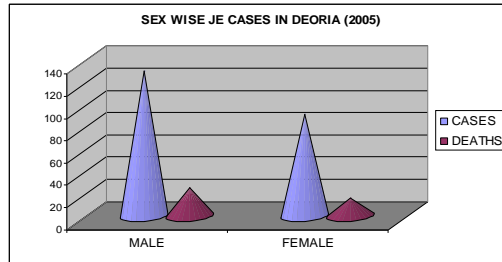
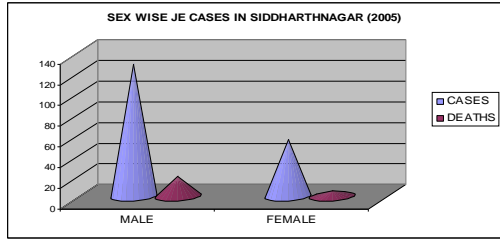


Figure 2.7



In these diagrams it is clear that males are more affected than females in Sant Kabir Nagar. Of the 104 cases, 63 were males and 41 were females. It may be due to the reason of males sleeping outside the houses with bare body.

Conclusion:

The null hypothesis is accepted for all the 6 districts, Gorakhpur, Maharajganj, Kusinagar, Deoria, Basti, Siddhartha Nagar except Sant Kabir Nagar in U.P. in year 2005. That exception may be due to faulty reporting or faulty identification /specification of the JE cases. We have no statistical evidence to say that any particular sex or age group is more or less prone to death after being attacked by the disease as per reporting in UP as a whole , as well as in all individual six districts under study. So statistically we may say that all affected persons have same risk and fear same fatality risk as far as death due to JE is concerned irrespective of their age and sex. Though from the past record it seems that age groups and sex have its impact on death or survival of JE cases; in most of the places no evidence was found to be statistically strong. This may be due to the limitation of the statistic used for testing the hypothesis. A deeper and more sensitive analysis is required to be carried out as it is found that a specific age group and sex seems to be more affected by the consequence through previous records consistently barring a few exceptions.

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