

## STATUS OF HAEMORRHAGIC SEPTICAEMIA BASED ON EPIDEMIOLOGY IN PAKISTAN

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### ABSTRACT

Haemorrhagic septicaemia (HS) was recorded by prevalence and importance percentages in Pakistan using various procedures of Participatory Disease Surveillance. The data obtained were analyzed to identify the high risk and low risk areas for HS in Pakistan. The highest prevalence (49.00%) was recorded in Khanewal district, while lowest (0.78%) was recorded in Jamshaid Saddar (Karachi). Highest importance (75.64%) was recorded in Faisalabad district, while lowest (1.53%) was recorded in Bajaur agency.

**Key words:** Haemorrhagic septicaemia, Participatory Disease Surveillance, epidemiology.

### INTRODUCTION

Haemorrhagic septicaemia (HS) is an acute, and often fatal, disease principally occurring in cattle and water buffaloes, but occasionally other domesticated and wild mammals can also be affected (Carter and De-Alwis, 1989; De-Alwis, 1992). It is primarily a Pasteurellosis caused by *Pasteurella multocida* and manifested by an acute and highly fatal septicaemia. Radical changes in weather, including the advent of monsoon, debility caused by seasonal scarcity of the fodder and pressure of work (draught animals) are related to the explosive occurrence of the disease in certain parts of the world (De-Alwis, 1999). South Asia, where such conditions coincide, is the area of highest incidence. The disease also occurs in Middle East and Africa, where environmental circumstances and predisposing conditions are not as clearly defined as in Southeast Asia (De-Alwis, 1999). Specific strains of *P. multocida* namely; B:2, B:2,5 and E:2 and E:2,5 have been detected in HS cases in Asia and Africa, respectively.

In Pakistan, HS is considered as a disease of great economic importance. Only in Punjab, the losses due to HS are more than 2.17 billion Pakistani rupees (Anonymous, 1996). According to an estimate, Pakistan has a cattle population of 24.2 million and a buffalo population of 26.3 million heads (Anonymous, 2005).

Participatory Disease Surveillance (PDS), an active type of disease surveillance, is the application of participatory techniques, like owner's knowledge about the clinical signs, gross pathology and epidemiology, to draw conclusion about disease through variety of questions from the key informers during the interview. The concept of PDS was introduced in Pakistan by Food and Agriculture Organization (FAO) under the

project "Support for Emergency Prevention and Control of Main Trans-boundary Diseases in Pakistan". Seventeen teams comprised of 51 active field veterinarians searched trans-boundary animal diseases and other important diseases throughout the country. The data generated by these teams during 2000-2005 have been analyzed and presented here. It would help to design future studies and development of a national strategy for the control of HS in Pakistan.

### MATERIALS AND METHODS

#### Field investigations and disease intelligence

Seventeen PDS teams comprised of 51 active field veterinarians searched trans-boundary animal diseases (TADs) and other important diseases throughout the country. The data obtained were based on active surveillance including the knowledge of farmers, traditional and oral history. A total of 10% of the villages were randomly selected throughout Punjab, Sindh, North Western Frontier Province (NWFP), Azad Jammu and Kashmir (AJK) and Northern Areas. In Balochistan province, data from Mastung, Chagi, Lasbella, Turbat, Gawadar, Ziarat and Ketch districts were collected. Meetings and interviews were carried out by engaging the field veterinarians and para veterinary staff. For elaboration, disease probing questions were asked to draw the information. A check list which comprised of proportional piling, mapping and seasonal calendar and interview with key informants through open and close ended questions was prepared. Besides the trans-boundary animal diseases, other livestock diseases were also investigated throughout the country.

Proportional piling for the important and prevalent diseases was carried out by the engagement of farmers. This evolved the parallel disease reporting system to the conventional reporting system of provincial Livestock and Dairy Development Departments and other non governmental organizations (NGO's).

#### Data analysis and data base development

The reports obtained by all PDS teams were analyzed. The prevalence and importance of HS from the data were compiled for obtaining the high risk and low risk areas. Using this information, a data base was developed. The parameters like the geographical distribution, prevalence and importance of the HS were recorded and analyzed during the reporting period from 2000 to 2005.

#### Haemorrhagic septicaemia mapping

On the basis of data base, HS was mapped in Pakistan. The data were grouped from the range 0-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35, 36-40, 41-45 and 46-50% of prevalence.

### RESULTS AND DISCUSSION

During the campaign for the eradication of rinderpest in Pakistan, it was elucidated that the livestock owner's reports were not adequately captured in the existing passive reporting system. After it was acknowledged that there were serious deficits in the functioning of disease surveillance and reporting, the PDS was incorporated with the objectives to enhance the sensitivity and timeliness of the over all surveillance system. Besides the trans-boundary animal diseases, other livestock diseases were also investigated throughout the country by the PDS teams. Mariner and Roeder (2003) adopted the PDS approach in Africa and reported it an accurate and rapid method to understand distribution and dynamics of rinderpest in pastoral areas. According to Mariner *et al.* (2003), the introduction of PDS activity into Pakistan disease reporting system greatly enhanced the sensitivity of the system and created alternate channel for livestock owner's voices to be heard.

The percentage prevalence and percentage importance of HS in various districts of Punjab are shown in Fig. 1. In Punjab, the highest prevalence of HS (49.00%) was recorded in Khanewal district, while lowest (5.37%) was recorded in Attock district. Highest (75.64%) importance was recorded in Faisalabad district, while lowest (8.00%) was recorded in Attock district.

In NWFP, the highest prevalence (22.25%) was recorded in Mansehra district, while the highest importance (60.00%) was recorded in Malakand

agency. The lowest prevalence (1.94%) and importance (1.53%) were recorded in Bajaur agency (Fig. 2).

Karachi was divided into 13 towns namely Liyari, Orangi, Baldia, Site, Kiamari, GADAP, Gulshan-e-Iqbal, Liaqatabad, Gulberg, New Karachi, North Nazimabad, Jamshaid Saddar and Landhi Cattle Colony. Among these, the highest prevalence (31.10%) was recorded in GADAP, while lowest (0.78%) was recorded in Jamshaid Saddar. Highest importance (33.34%) was recorded in GADAP, while lowest (2.67%) was recorded in North Nazimabad (Fig. 3).

Among other districts of Sindh, the highest prevalence (29.97%) was recorded in Larkana district, while lowest (2.05%) was recorded in Tharparkar district. Highest importance (36.56%) was recorded in Hyderabad district, while lowest (5.74%) was recorded in Tharparkar district (Fig. 3).

In AJK, the highest prevalence (12.86%) was recorded in Bhimber district, while the highest importance (26.64%) was recorded in Mir Pur district. The lowest prevalence (8.40%) and importance (12.93%) were recorded in Rawala Kot district (Fig. 4).

No HS case was reported by PDS teams in Mastung, Chagi, Lasbella, Turbat, Gawadar, Ziarat and Ketch districts of Balochistan. Similarly, no disease was reported by PDS teams in Ghanche, Gizer, Diamer, Astore and Skardu districts of Northern Areas. In Islamabad Capital Territory (ICT), the prevalence and importance were 16.2 and 25%, respectively.

The percentage importance of HS was higher than its prevalence in almost all the districts. This seems to be due to the fact that the losses are associated with the disease. Farmers are more concerned about the animals and their production losses.

HS is economically important disease and losses due to this disease have been reported by various workers from time to time. Anonymous (1996) reported a loss of about 2.17 billion Pakistani rupees by HS per year. FAO (1979) reported 34.1 percent deaths with HS in susceptible animals, while Chaudhry and Khan (1978) estimated 1.89 billion Pakistani rupees economic losses due to this disease. Khan *et al.* (1994) conducted a study in 10 of the 95 villages in Lahore district and reported that HS, FMD and gastrointestinal diseases were the main causes of economic losses. The geographical distribution of HS in Pakistan is shown in map (Fig. 5).

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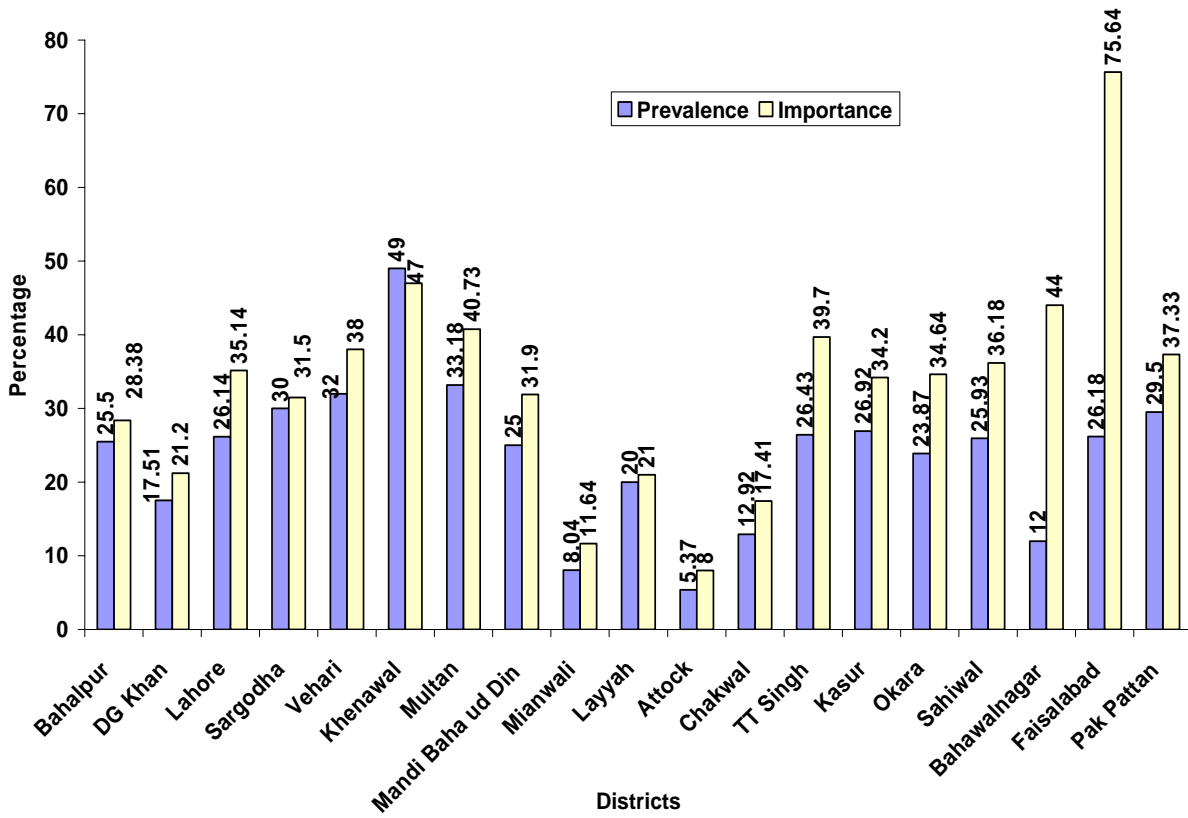


Fig. 1: Comparative prevalence and importance of HS in different districts of Punjab province.

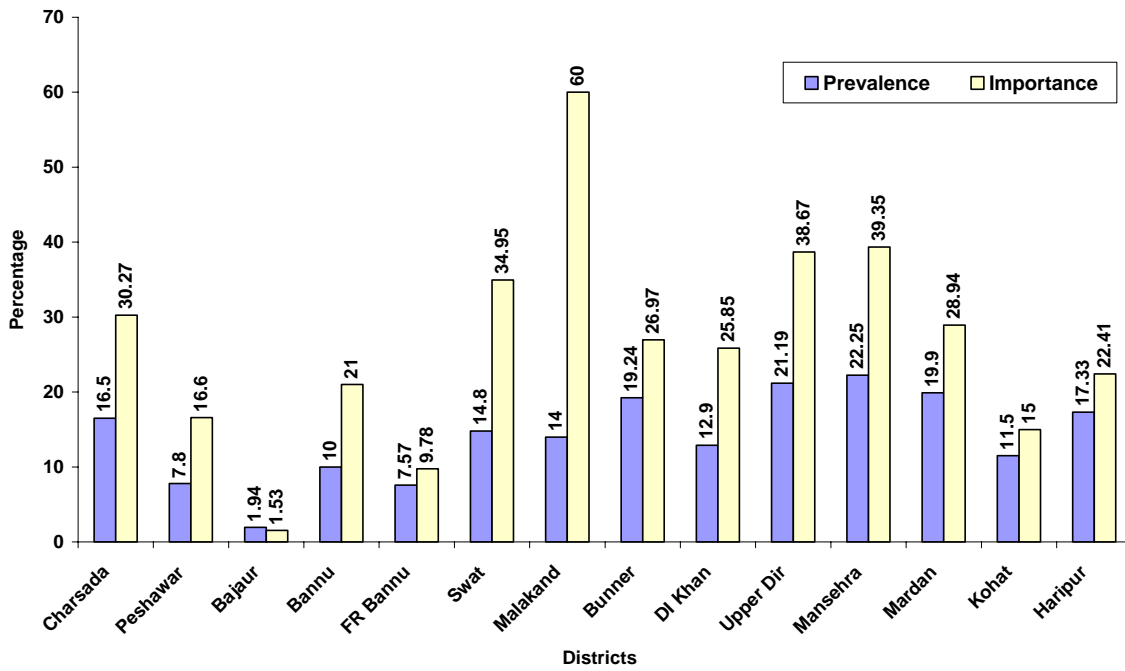


Fig. 2: Comparative prevalence and importance of HS in different districts of NWFP province.

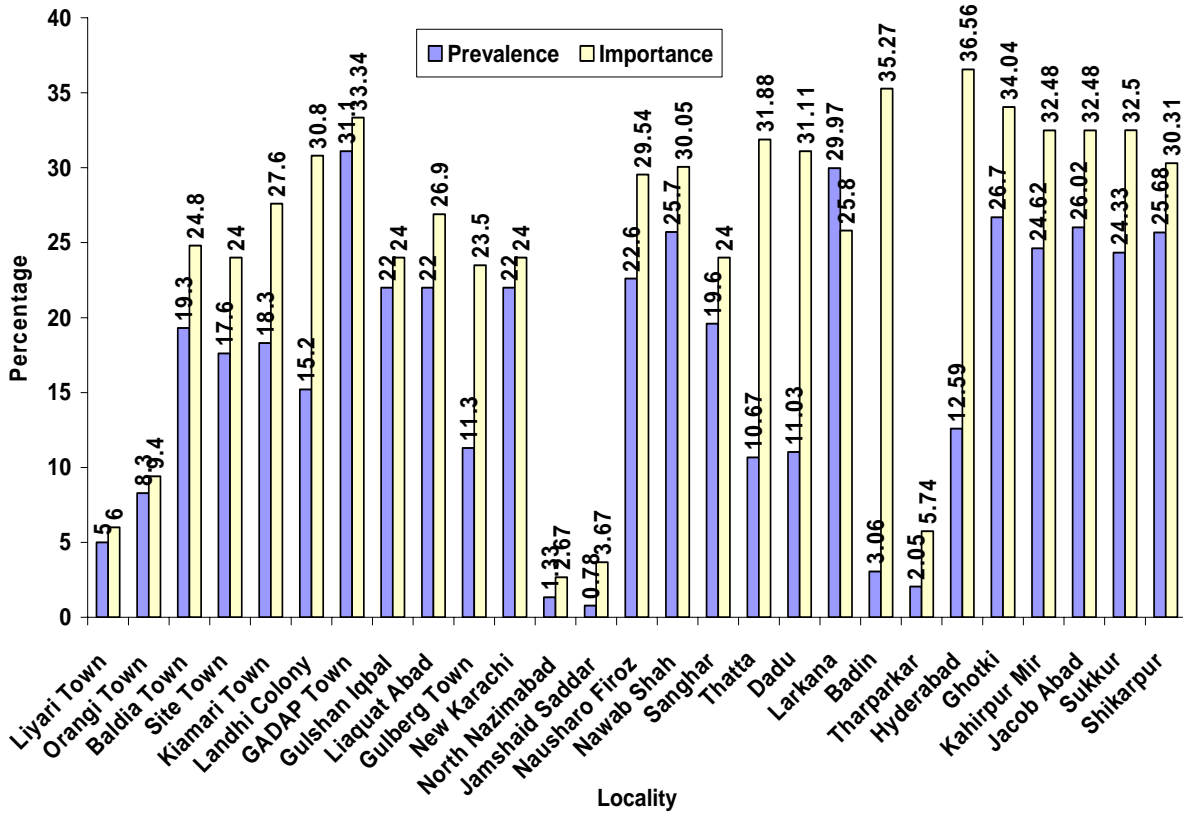


Fig. 3: Comparative prevalence and importance of HS in different localities of Sindh province.

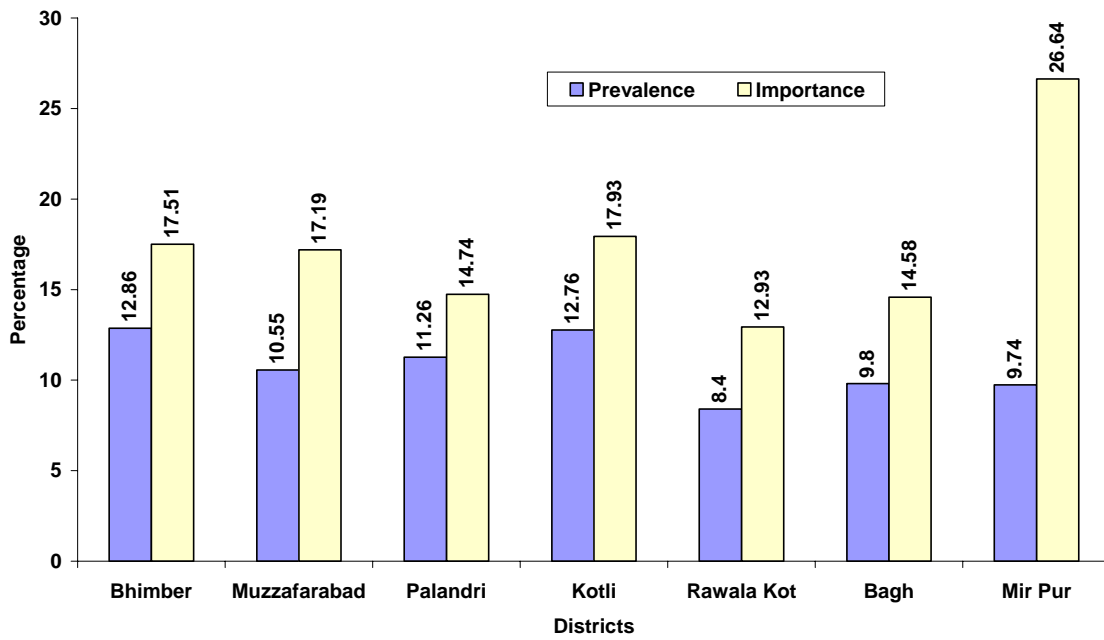


Fig. 4: Comparative prevalence and important of HS In different districts of AJK.

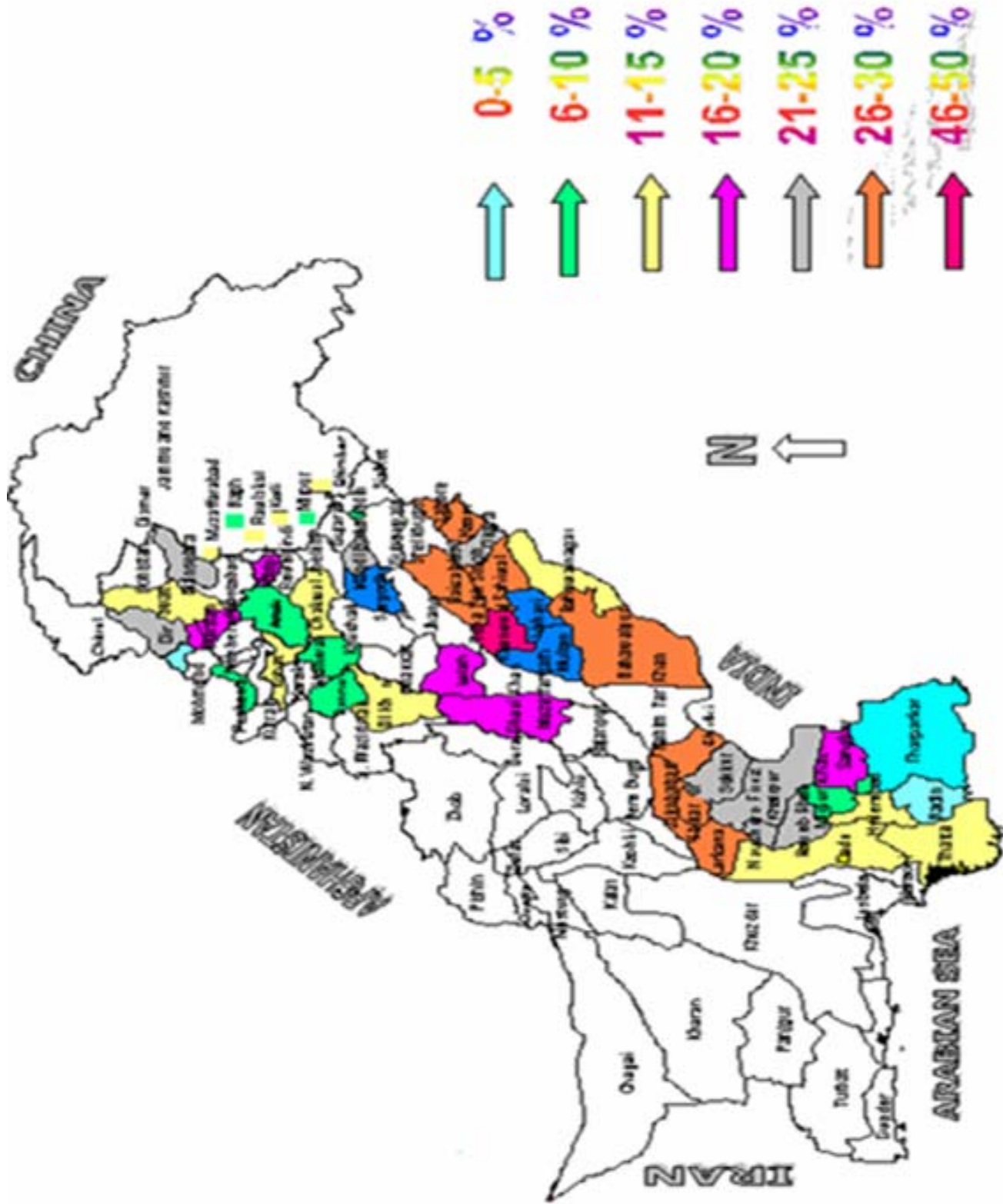


Figure 5: Geographic distribution (prevalence) of HS in Pakistan.

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