

# Changing Profile of Herpes Zoster in Nepal: A Hospital-Based Study.

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## Abstract

**Background:** Herpes zoster (HZ), commonly known as shingles, is a localized disease characterized by unilateral radicular pain and a vesicular eruption that is generally limited to the dermatome innervated by a single spinal or cranial sensory ganglion. Although a relatively common cause of morbidity, especially among the elderly, contemporary estimates of HZ in different groups are lacking. Herein we describe a hospital-based study of herpes zoster in a central hospital of Nepal.

**Objectives:** This study was undertaken to i) Know the age and sex distribution of HZ, ii) Observe the seasonal variation of HZ and iii) Observe the dermatomal involvement of HZ patients.

**Methods:** The study included 174 consecutive patients attending Department of Dermatology and Sexually Transmitted Diseases (STD), Bir Hospital, National Academy of Medical Sciences (NAMS), Kathmandu, Nepal and diagnosed with HZ by dermatologic examination and recorded in the OPD register within one year were retrospectively analyzed.

**Results:** there was an overall incidence of 0.66 percent among the new patients with M: F ratio being 2.16:1. The maximum incidence was noted in the second and third decades. A higher incidence was observed in the month of mid April to mid July. Thoracic segments were most commonly (56.32%) involved followed by cervical (16.67%), lumbo-sacral (14.94%) and, cranial (12.07%) segments.

**Conclusion:** From the present study and the previous published reports from Nepal and India, it is evident that the age profile of herpes zoster patients is quite lower than in the reports published from other regions of the world.

**Keywords:** Herpes zoster, Clinico-epidemiological profile, dermatomes

## Introduction

Herpes zoster (HZ), commonly known as shingles, is a localized disease characterized by unilateral radicular pain and a vesicular eruption that is generally limited to the dermatome innervated by a single spinal or cranial sensory ganglion. The individual lesions are characterized by grouped vesicles on an erythematous base. It occurs as a result of reactivation of varicella zoster virus (VZV) that had persisted in latent form within sensory ganglion following an earlier attack of varicella.<sup>1</sup> Varicella-Zoster Virus is an exclusively human DNA virus, hence, also known as human (alpha) herpes virus 3, whose primary infection in the human produces chicken pox (varicella).<sup>2</sup> During varicella infection, VZV passes from skin lesions into cutaneous sensory nerve endings and ascends up the sensory fibers to the sensory ganglia where it remains in latent stage.<sup>3</sup> In latency, the virus persists in a noninfectious form with intermittent periods of reactivation and shedding.

Antigen-specific T cells are believed to be the principal gatekeepers of latent VZV. Conditions in which cellular responses were lost or diminished by immunosuppression pose a risk for reactivation

of VZV and recurrent disease manifestation as herpes zoster.<sup>4,5,6</sup> The biologic mechanisms that underlie the transition from latency to active viral replication are unknown.<sup>7</sup> On reactivation, it travels back along the sensory afferents to the skin associated with hematogenous dissemination. Depending upon the rapidity of immune response, the presentation may vary from no clinical lesions, to typical zoster, scattered vesicles, zoster sine herpette or disseminated zoster.<sup>8</sup>

Herpes zoster has traditionally affected persons with more than 60 years of age.<sup>9</sup> Herpes zoster in older individuals is associated with loss of VZV-specific cellular immunity.<sup>10</sup> Epidemiologic surveys conducted over the last 50 years suggest that the incidence of HZ in the normal host may be increasing.<sup>11</sup> The recorded incidence of HZ has been found to be 64% higher than that reported 40 years ago.<sup>12</sup> Herpes zoster occurs throughout the year without seasonal prevalence, and it affects both sexes and all races equally.<sup>13,14</sup> Increasing age has clearly been established as the most important risk factor for the development of HZ. There is a significant increase in the age-specific

incidence of HZ beginning at around 50-55 years of age; individuals over 75 years of age have a zoster incidence of over 10 cases per 1000 person years. In a population based investigation on the incidence of HZ by *Donahue et al.* (1995), the incidence did not vary by gender. Although the rate increased sharply with age, approximately 5% of the cases occurred among children younger than 15 years. In addition to age, the other well-defined risk factor for HZ is altered cell mediated immunity (CMI) (*Gnann and Whitley* 2002). Although herpes zoster is not a reportable disease, an estimated 300 000 to 500 000 cases occur annually in the United States.<sup>15</sup>

There are very few hospital-based studies on the epidemiology and clinical profiles of HZ in South Asia. Although a relatively common cause of morbidity, especially among the elderly, contemporary estimates of HZ in different groups are lacking. Herein we describe a hospital-based study of herpes zoster in a central hospital of Nepal.

#### This study was undertaken to:

1. Know the age and sex distribution of HZ.
2. Observe the seasonal variation of HZ.
3. Observe the dermatomal involvement of HZ patients.

#### Materials and methods

The study included 174 consecutive patients suffering from HZ, who were all out patients and presented to the hospital for the first time at the Department of Dermatology and Sexually Transmitted Diseases (STD), Bir Hospital, National Academy of Medical Sciences (NAMS), Kathmandu, Nepal between Baishakh 2064 B.S. to Chaitra 2064 B.S. (15<sup>th</sup> April 2007 to 11<sup>th</sup> April 2008). All patients diagnosed with HZ by dermatologic examination and recorded in the OPD register were analyzed.

#### Results

One hundred and seventy four cases of HZ were recorded from 2<sup>nd</sup> of Baishakh 2064 BS to 29<sup>th</sup> of Chaitra 2064 BS (i.e. 15<sup>th</sup> April 2007 AD to 11<sup>th</sup> April 2008 AD). A total of 26,489 new cases attended the Dermatology and STD OPD of Bir Hospital during the study period, thus the frequency of occurrence of herpes zoster amongst skin OPD cases was more than 0.65 per cent (approximately 6.57 cases per thousand). Among them 119 (68.39%) were males and 55 (31.61%) were females (Table I); the male: female (M: F) ratio being 2.16:1. The minimum and maximum age of the patients was 10 and 81 years respectively. The mean age at presentation was 34.5+/-SD 17.85 years. As evident from the Table I, more than 67.24% of the patients were below 40 years of

age, where as 77.01% of the patients were below 50 years of age, and only 22.99% were above 50 years.

Approximately 15% of the patients attended the hospital in the month of Jestha (Table 2). The disease was more prevalent during the months of Baishakh to Ashad (mid April to mid July) (Fig. 1).

Ninety-eight (56.32%) patients had involvement of thoracic dermatomes and 29(16.67%) patients had involvement of cervical dermatomes (Table 3, Figure 2). A total of 26(14.94%) patients suffered from lumbo-sacral zoster followed by cranial zoster (12.07%)(Figure 3). There was very significant increase in the number of Herpes zoster ophthalmicus cases in male patients (Table 3).

**Table-1.** Age and gender distribution of patients.

Age group (in years)	Male (%)	Female (%)	Total (%)
10-19	25 (14.37)	10 (5.75)	35 (20.11)
20-29	40 (22.99)	17 (9.77)	57 (32.76)
30-39	16 (9.19)	9 (5.17)	25 (14.37)
40-49	11 (6.32)	6 (3.45)	17 (9.77)
50-59	10 (5.75)	3 (1.72)	13 (7.47)
60-69	9 (5.17)	9 (5.17)	18 (10.34)
70-79	6 (3.45)	1 (0.57)	7 (4.02)
Above 80	2 (1.15)	0 (0.00)	2 (1.15)
Total	119(68.39)	55(31.61)	174 (100%)

**Table-2.** Month wise distribution of the cases of Herpes zoster

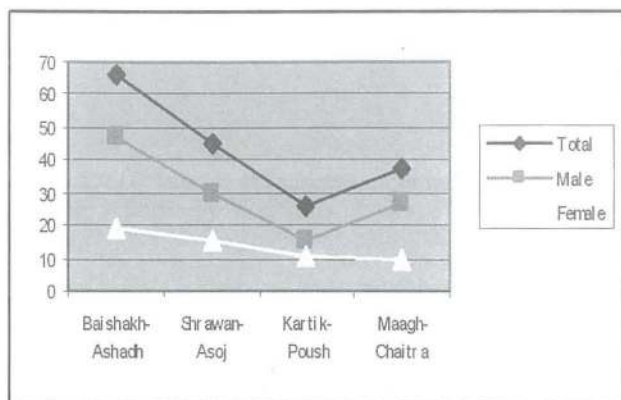
Month	Male	Female	Total (%)
Baishakh(mid April-mid May)	12	6	18(10.34)
Jestha (mid May-mid June)	19	7	26(14.94)
Ashad (mid June-mid July)	16	6	22(12.64)
Shrawan (mid July-mid August)	15	4	19(10.92)
Bhadra (mid August-mid Sept)	8	7	15(8.62)
Asoj (mid Sept.-mid Oct)	7	4	11(6.32)
Kartik (mid Oct.-mid Nov.)	7	1	8(4.6)
Mangshir (mid Nov.-mid Dec)	4	5	9(5.17)
Pousha (mid Dec.-mid Jan.)	4	5	9(5.17)
Magh (mid Jan.-mid Feb.)	1	2	3(1.72)
Falgun (mid Feb.-mid March)	16	4	20(11.49)
Chaitra (mid March-mid April)	10	4	14(8.05)

**Table-3.** Dermatomal involvement according to gender in herpes zoster.

Dermatome involved	Male (%)	Female (%)
HZ ophthalmicus	16 (9.16)	1 (0.57)
HZ Maxillary	2 (1.15)	1 (0.57)
HZ mandibular	1 (0.57)	0 (0.00)
Cervical	20 (11.49)	9 (5.17)
Thoracic 1-6	34 (19.54)	17 (9.77)
Thoracic 7-12	31 (17.82)	16 (9.2)
Lumbar	10 (5.75)	5 (2.87)
Sacral	5 (2.87)	6 (3.45)



**Figure 1.** Line diagram showing trend of herpes zoster through out the year.



**Figure 2.** Herpes zoster of C6-7 dermatome.



**Figure 3.** Herpes zoster involving the maxillary division of Trigeminal nerve in a 67 years-old lady (file photo).



### Discussion

A hospital based study of herpes zoster is lacking in our country. Our aim in undertaking this study was to take a first step towards finding the epidemiological parameters in the incidence of

HZ. One can argue that the population studied does not represent the whole country as it is done in urban setting in a highly biased sample. But we think that our sample is fairly representative as because. Bir Hospital is the central governmental and tertiary referral hospital of the country with patients coming to this hospital from all over the country. In a study of 274 cases of HZ, Kayastha and Shilpakar (2005) has revealed an overall incidence of 0.98 percent of HZ cases among patients attending the Dermatology OPD of Bir Hospital.16 The mean age at presentation was 34.6 years +/- SD 16.7 with the highest number of cases occurring in the 3rd decade (32.85%) and the male: female ratio was 2.46:1. They had reported that more than 82 % of the patients were below 50 years of age. Our study has shown that the mean age of the HZ patients is 34.5 +/- SD 17.85 years, and the maximum incidence is seen in 2nd and 3rd decade (20.11% and 32.76% respectively). More than 2/3rd of the patient population consisted of males (M: F ratio being 2.16:1) and more than 77% of the patients were below 50 years of age. According to Dubey et al. (2005) more than two thirds of the cases occur in individuals over fifty years of age and less than ten percent occur in those under the age of twenty years. The average age at presentation in our study is a decade less than the findings of Goh and Khoo.17 Eighty (74.7%) of our cases were less than 50 years that is much higher percentage than seen in their study. The maximum incidence of HZ in second and third decade has been found by Chaudhary et al.,18 and M: F ratio of 2.2:1 was seen in the same study. In a study by Laxmisha et al. on forty cases of herpes zoster which included 5 children and 35 adults; majority of the cases (75%) occurred below 50 years of age, 22.5% of cases were below 20 years.19 Mullooly et al., in 2005 found significant increase in HZ incidence rates in Oregon and Washington during 1997-2002 among children aged 10-17 years apparently associated with increased exposure to oral steroids.20 But other studies have put the maximum incidence of HZ in the age group of above 50 years.21 Our study had 12 (4.4%) patients who were younger than 15 years.

Gershon (1995) has stated that HZ is unusual in young adults; and it occurs with equal frequency through the year. But our study reveals that it is more frequent during the months of mid-April to mid-July. Some seasonal variation of HZ has been found by Peto TEA and Juel-Jensen BE22 Chaudhary et al. in 1987 found a higher incidence of HZ in the months of March - May and August-October, which was correlated with the increased incidence of varicella during these months by Haribhakti and Macwan(2001).23



The maximum number of our cases had involvement of thoracic dermatomes (56.32) which was followed by cervical (16.67%), cranial (12.07%) and lumbosacral(14.94%) dermatomes which is similar to the study by Chaudhary et al. and De Biasi RL et al.<sup>24</sup> According to De Biasi et al., 14 to 20 % of patients had disease in the distribution of a cranial nerve. In the study of Laxmisha et.al (2004) the dermatomes involved in decreasing frequency were thoracic (24 cases i.e.60%), followed by ophthalmic (6 cases i.e. 15% ) and sacral (5 cases i.e. 12.5%). In contrast to the statement by Ragozzino et al., that HZO appears to affect a slightly different population than zoster of the other dermatomes, with elderly males being more at risk , we found the incidence of HZO in the younger population similar to other dermatomes(mean age of 40.94 years).

### Conclusion

Our study supports the report given by Chaudhary et al. (1987) and Laxmisha et al.(2004) that HZ is occurring in younger patients than previously reported in western literatures. Since herpes zoster may occur in HIV-infected persons who are otherwise asymptomatic, serologic testing may be appropriate in patients without apparent risk factors for HZ (e.g., healthy persons who are younger than 50 years of age (Gnann and Whitley, 1997).

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