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The evolving profile of herpes zoster outpatients: A literature review of socio-demographics, comorbidities, and clinical manifestations

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Abstract

Objective: This literature review synthesizes recent clinical and epidemiological data on the changing profile of Herpes Zoster (HZ) outpatients, examining how socio-demographic shifts, metabolic conditions, anatomical variations, and real-world preventative practices interact.

Methodology: PubMed, Scopus, Google Scholar, and ScienceDirect were all analyzed academically for articles published from 2021 to 2026. Qualitative synthesis of studies using demographic trends, body mass index (BMI), HbA1c thresholds, and neurological sequelae was conducted in HZ outpatients.

Results: Global and regional registries reveal a structural shift termed "age compression," marked by rising HZ incidence among immunocompetent adults under 50, alongside a consistent female preponderance. From an immunometabolism perspective, an elevated BMI (>25 kg/m^2) and Type 2 Diabetes Mellitus significantly accelerate cellular aging and memory T-cell decline, weakening host control over the dormant *Varicella zoster* virus. Trigeminal and ophthalmic nerve involvement continue to pose substantial risks for ocular complications and severe Postherpetic Neuralgia (PHN). Furthermore, a stark geographic vaccine implementation gap persists in developing nations, where acute reactive antiviral therapies remain the primary clinical approach.

Conclusion: The HZ outpatient profile has evolved from a traditional geriatric model into a complex landscape heavily influenced by metabolic health and lifestyle factors. Effective contemporary management requires robust early screening protocols and expanded access to adult recombinant immunization.

Keywords: *Herpes zoster*; Outpatient Profile; Socio-Demographics; Comorbidities; Immunometabolism; Postherpetic Neuralgia

1. Introduction

Herpes Zoster (HZ) is an intermittent manifestation of pain caused by the activation of *Varicella zoster* virus (VZV) which is latent in the cranial nerve or the dorsal root ganglia. For many decades, the common consensus on the epidemiology of HZ regarded HZ as a predictable disease among the elderly, due mainly to the gradual reduction of cell-mediated immunity (CMI) caused by natural aging, a phenomenon termed immunosenescence. Outpatient clinic registries have provided a paradigm shift from the earlier conventional view of HZ. Constraints associated with HZ are becoming more flexible, and the clinical scenario now includes patients with unique demographics, clinical severity, and systemic risks.

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Today, primary care and dermatology clinics are documenting a noticeable uptick in younger, physically active, and apparently healthy individuals presenting with classic dermatomal eruptions. At the same time, global shifts in metabolic health, such as rising obesity rates, shifting body mass index (BMI) averages, and chronic insulin resistance, have introduced a new set of immunological variables. These metabolic shifts alter how well a host can keep latent viral pathogens under control.

While large-scale epidemiological trends are thoroughly documented in Western countries, localized clinical profiles from Southeast Asian tertiary centers, such as Universitas Airlangga in Indonesia, remain comparatively sparse in global literature. Evaluating these changing socio-demographic, metabolic, and clinical phenotypes is essential not just for statistical bookkeeping, but for identifying high-risk patients before severe complications take hold. This review consolidates recent peer-reviewed evidence to update our understanding of contemporary HZ outpatient profiles and address current real-world gaps in preventative care.

2. Materials and Methods

To ensure this review remains transparent, rigorous, and reproducible, we used a structured literature-screening approach across four primary medical databases: PubMed, Scopus, Google Scholar, and ScienceDirect. The analysis was restricted to peer-reviewed papers published between 2021 and 2026 to ensure the findings accurately reflect modern shifts in VZV epidemiology and immunology.

Our electronic search strategy utilized Boolean combinations of specific MeSH terms and text keywords, including: ("Herpes Zoster" OR "Shingles") AND ("Outpatient Profile" OR "Socio-demographics") AND ("Comorbidities" OR "Obesity" OR "Diabetes Mellitus") AND ("Clinical Manifestations" OR "Postherpetic Neuralgia").

Articles were included if they provided primary observational data, multi-center retrospective analyses, or prospective cohort registries looking specifically at human outpatient demographics or metabolic characteristics. We excluded childhood varicella studies, isolated in-vitro experiments, and any papers that lacked adjusted statistical formatting for age and biological sex. Ultimately, 20 high-impact papers were selected to build a balanced, global, and regional analysis suitable for academic benchmarking.

3. Results and Discussion

3.1. Socio-Demographic Transitions: Age Compression and Gender Disparities

Historically, chronological ageing was regarded as the single most important factor in VZV reactivation. However, current multi-center registry data show a fascinating trend toward "age compression," with an increasing percentage of HZ cases presenting in outpatients aged 30 to 49 who had no symptoms of typical immunosuppression such as HIV or active cancer. Modern lifestyle conditions, such as persistent sleep disturbances and excessive psychological stress, appear to result in sustained allostatic loads. Even if a patient's immune system appears to be in perfect working order, these neuroendocrine changes can produce brief, focused decreases in VZV-specific memory T-cells.

In terms of gender distribution, current outpatient tracking regularly reveals a higher proportion of women, who typically account for 55% to 60% of confirmed clinical cohorts. Endocrine-immunological research indicates that the postmenopausal transition is important in this regard. The decrease in systemic estrogen, a hormone that ordinarily aids in the maintenance of adaptive cell-mediated immunity that makes middle-aged and elderly women more susceptible to viral escape from the nerve root. Furthermore, socio-behavioral studies indicate that these figures are likely influenced by health-seeking patterns, with female outpatients seeking primary medical treatment earlier and more frequently than men.

3.2. Metabolic Vulnerabilities: The Interplay of BMI and Comorbidities

One of the most significant advances in recent VZV research is the junction of metabolic health and viral disease, known as immunometabolism. Instead of viewing HZ risk as limited to profound medical immunosuppression, new clinical evidence point to the gradual, persistent deterioration of immunity induced by common metabolic disorders.

Table 1 Mechanistic Interplay Between Metabolic Comorbidities, Altered Cell-Mediated Immunity, and Clinical Outcomes in Herpes Zoster Outpatients

Metabolic Parameter/Comorbidity	Impact on Cell-Mediated Immunity	Clinical Outcome in HZ Outpatients
Elevated BMI (> 25kg/m^2)	Adipokine imbalances; chronic low-grade systemic inflammation; accelerated memory T-cell senescence.	Increased baseline risk, delayed healing of vesicles, and higher acute pain scores.
Type 2 Diabetes Mellitus	Glycation of functional proteins; impaired leukocyte migration; skewed $CD4^+/CD8^+$ lymphocyte ratios.	Up to a 1.38-fold increase in relative risk; higher rates of multidermatomal or recurrent episodes.
Cardiovascular Disease & HTN	Endothelial dysfunction; chronic circulatory stress; microvascular changes in peripheral sensory nerves.	Serves as a strong indicator for long-term neuralgic pain and poor localized nerve recovery.

Large-scale longitudinal cohort studies have helped us to understand how an elevated Body Mass Index (BMI) affects viral control (Table 1). Excess visceral fat tissue causes chronic, low-grade systemic inflammation. This continual cytokine activity effectively depletes memory T-cells prematurely, making it considerably more difficult for the body to keep the virus inactive within the sensory ganglia.

When combined with Type 2 Diabetes Mellitus, this risk increases dramatically. Chronic hyperglycemia affects leukocyte dynamics and microvascular delivery, resulting in larger vesicular lesions and a significantly more severe prodromal phase (Table 1). This clinical reality shows that severe or uncommon HZ symptoms can operate as a clinical warning sign, alerting doctors to evaluate outpatients for underlying, undiscovered metabolic disorders.

3.3. Anatomical Phenotypes and the Predictability of Complications

The clinical trajectory of a HZ outpatient is significantly influenced by the individual neural pathway implicated. While thoracic and lumbar dermatomes continue to be the most common presentations in everyday practice, cranial nerve involvements are significantly more dynamic.

Herpes Zoster Ophthalmicus (HZO), which affects the ocular branch (*V1*) of the trigeminal nerve, accounts for around 10% to 15% of outpatient cases and poses severe long-term hazards. Recent data monitoring reveals that the traditional appearance of vesicles on the tip of the nose (Hutchinson's sign) is an excellent predictor of deeper ocular problems such as keratitis, uveitis, and secondary glaucoma.

Fundamentally, current neurological data indicate that the intensity of the initial acute inflammatory phase has a direct impact on long-term nerve injury. Rapid viral replication causes structural harm to peripheral nerve fibers, resulting in the altered, hyperactive signaling that defines Postherpetic Neuralgia (PHN). This chronic, excruciating neuropathic pain can last for months or years, imposing significant physical and mental strain on the patient.

3.4. The Prophylactic Gap in Developing Healthcare Systems

There is a sharp disparity between international prevention guidelines and the practical realities of outpatient care in developing healthcare systems. Modern global literature usually emphasizes a significant public health milestone: the transition from live-attenuated vaccines to the very stable Recombinant Zoster Vaccine. Real-world data demonstrate that RZV has over 90% protective efficacy across all adult age groups and lasts for a decade, even in patients with chronic metabolic problems.

Despite these evident clinical benefits, outpatient records from regional tertiary institutions, particularly in Southeast Asia, indicate a significant under-immunization problem, with baseline vaccination rates frequently falling below 1%. Because of this mismatch, local clinical care is virtually completely reactive. Physicians must rely largely on initiating oral antiviral regimens (such as Acyclovir or Valacyclovir) within a precise 72-hour window following the manifestation of the rash. When patients miss this small therapeutic window due to delayed care or early diagnostic errors, they are extremely sensitive to long-term nerve pain, transforming a preventable problem into a substantial chronic care concern.

4. Conclusion

The clinical profile of the Herpes Zoster outpatient is modified. Today's patients are younger and more susceptible to systemic metabolic stresses such as high BMI and Type 2 Diabetes Mellitus. These findings demonstrate the need to move beyond simplistic, age-based risk assessments and take a more comprehensive look at a patient's metabolic and immunological health. To lessen the burden of long-term sequelae like postherpetic neuralgia, healthcare systems, especially in developing regions must actively endeavor to narrow the gap between treating acute outbreaks and offering proactive, recombinant immunization.

Compliance with ethical standards

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Disclosure of conflict of interest

The author declare no conflict of interest.

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