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# Viruses Like Chickenpox And Shingles Provide Difficulties For Public Health

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**ABSTRACT**

This study aims to assess the epidemiological behaviour of varicella and herpes zoster (HZ) to identify whether or not health policies are required to reduce the prevalence of these diseases and stop complications from occurring. Both the materials and the processes. We analysed data from the National Information System for Epidemiological Surveillance (SUIVE) from 2000 to 2013 to determine the frequency of the occurrences. To evaluate the discharge data of varicella and HZ, we reviewed information from the National System of Health information called Sinais. This is the outcome. A total of 296,733 instances of chickenpox were reported annually, with 57% of those cases occurring in children younger than nine years old and the majority occurring during March and May. The number of patients discharged from hospitals with varicella between 2004 and 2012 was 17,398. Of those patients, 4.6% had meningoectolitis, 2.5% had pneumonia, and 18% had various sequelae. Regarding herpes zoster, there were 7 042 discharges, the majority of patients afflicted were those who were 65 years old or older, and the ratio of females to males was 1.3:1. Neuralgia (17%), eye involvement (7%), meningoencephalitis (5.4%), disseminated disease (2.8%). Other problems (5.4%) were the most common consequences, and the time spent in the hospital ranged from 6.4 to 13.3 days. The final thoughts. These findings are in line with the research that has been conducted in other nations. A discussion is held regarding vaccination's significance in preventing infection in children and adults.

**Keywords**: *Herpes zoster, chickenpox, population epidemiology, and Mexico.*.

## 1. INTRODUCTION

In the family of viruses known as the Alphaherpesvirinae, the Varicella zoster virus (VZV) is classified (Newman & Jhaveri, 2019). This category of viruses is known as neurotropic viruses, which only infect humans. Chickenpox is a highly contagious disease that can be transferred through direct contact through vesicles or aerosols generated by respiratory secretions. The primary infection is responsible for causing chickenpox (Kennedy et al., 2021). This condition typically affects children between the ages of one and nine years old; however, there have been reports from certain writers that it is more common in adults living in tropical regions (Malm & Navin, 2020).

Fever and skin lesions encompass macules, papules, vesicles, and mucosal lesions, the clinical manifestations used to identify this condition (Malm & Navin, 2020). It manifests itself in epidemic outbreaks every two to five years, with a pattern of seasonality that occurs at the end of winter and the beginning of spring (Swali et al., 2021). In the past, chickenpox was considered an illness that was common in childhood and primarily harmless; however, complications frequently arose (McElhaney et al., 2019). "One of the most prevalent infections affects the skin and soft tissues. Persistent scratching injuries typically cause this type of infection. Pneumonia, encephalitis, cerebellitis, and coagulopathies are additional consequences that necessitate hospitalisation (Hu et al., 2022). Different hospitals, primarily paediatric hospitals, reported fatality rates ranging from two to three per 100,000 patients, as well as complication rates that ranged from forty-seven per cent to eighty-three per cent. Even though there has been a safe and efficient vaccine for preventing this disease since 1986, it is not uncommon for them to appear in these centres (Giubilini, 2020). This is because there is no evidence to support the idea of universal vaccination in several nations, including Mexico

. (Curran et al., 2023). The virus that causes chickenpox remains dormant in the neurons of the dorsal root ganglia, the autonomic ganglia (including the intestinal ganglia), and the cranial nerves even after chickenpox has been contracted as a primary infection or through vaccination (Coughlin, 2012). This phenomenon is caused by the fact that only six of the virus's seventy-one genes are transcribed (Coughlin, 2012). This does not permit replication to take place, and as a result, no cytopathic effect can be observed. A modification in the immune response or old age are also factors that favour the reactivation of VZV, which, when it replicates, is responsible for the emergence of herpes zoster (HZ) (Steiner et al., 2007). As a clinical manifestation, 4-7 HZ is characterised by a vesicular and unpleasant rash, and it is situated over a dermatome (Lin & Hadler, 2000) (Lin & Hadler, 2000). The probability of incidence in the general population is between 30 and 40 per cent.58,5 Following the age of fifty, this risk becomes significantly higher. After the rash, the most common complication is postherpetic neuralgia. (NPH), which can cause great physical disability and emotional disturbances since it incapacitates the patient –mainly older adults– in carrying out their daily activities and sleeping; in other cases, it can cause ocular alterations that lead to vision loss or disseminated disease requiring hospitalisation. Both chickenpox and HZ are considered to be a public health concern in nations like Mexico, where the introduction of universal vaccination for the chickenpox vaccine has not yet been implemented (Fairley & Miller, 1996). It is essential to have a thorough understanding of the epidemiology of both diseases to be able to assess the necessity of effective health policies that aim to reduce the prevalence of both diseases, as well as to avoid complications to the greatest extent feasible, which can affect the quality of life of patients and the expenses associated with their medical care (Gnann Jr, 2002). There will be a significant rise in the number of older adults living in Mexico over the next few years. People over the age of 65 will become the group growing at the fastest rate.9 It will be essential to know the behaviour and calculate the impact that diseases such as HZ will have in this sector of the population to plan in an informed manner strategies that are more appropriate and efficient to promote a better quality of life in these individuals. The purpose of this article is to evaluate the epidemiological behaviour of chickenpox and herpes virus in the Mexican population between 2000 and 2013 (Gnann Jr, 2002). Additionally, the article will assess the hospital discharges of HZ patients according to the notification of the various health institutions in Mexico, considering the federal entity, age group, type of condition, and number of days spent in the hospital (Gabutti et al., 2016).

METHOD AND MATERIAL:

An analysis of the databases of the Unified System of Information for Epidemiological Surveillance (SUIVE) of the General Directorate of Epidemiology (DGE) of the Ministry of Health (SSa) between the years 2000 and 2013 was conducted to arrive at an estimate of the number of cases of chickenpox. ten. The databases of the National System of Health Information (Sinais) of the SSa for the same period covered hospital discharges of patients with chickenpox and shingles. (Rajan & Rivers, 2001).111 Because this material is accessible to the general public and can be sought out for consultation and analysis, it is unnecessary for an ethical commission to evaluate it. Establishing the chickenpox epidemic curve for the researched period required the establishment of a scale of time connected with epidemiological weeks that corresponded to each year with its date {Rajan, 2001 #1019}. This was done to characterise the epidemiological behaviour that occurred throughout the period spanning from 2000 to 2013. After that, a point estimate was made by epidemiological week, which was then calculated with intervals at a confidence level of 95% to define the behaviour characteristic of the period that was investigated.

RESULT:

There were a total of 4,154,265 cases of chickenpox that were recorded in Mexico during the years 2000 and 2013. The average annual number of cases was 296,733, with a standard deviation 51,371 (image 1).10 Of these, 1,645,120 were males, with an average yearly notification of 149,556 ± 24,186, and the remaining individuals (n=1,606,076) were females, with an annual average of 146,007 ± 25,386 instances (figure 2) (the classification of the SUIVE based on gender was from 2003). ten When looking at the distribution of the disease by age group over the course of the study, the age groups that were most afflicted were those of children under the age of nine, which was where the majority of the cases were found.

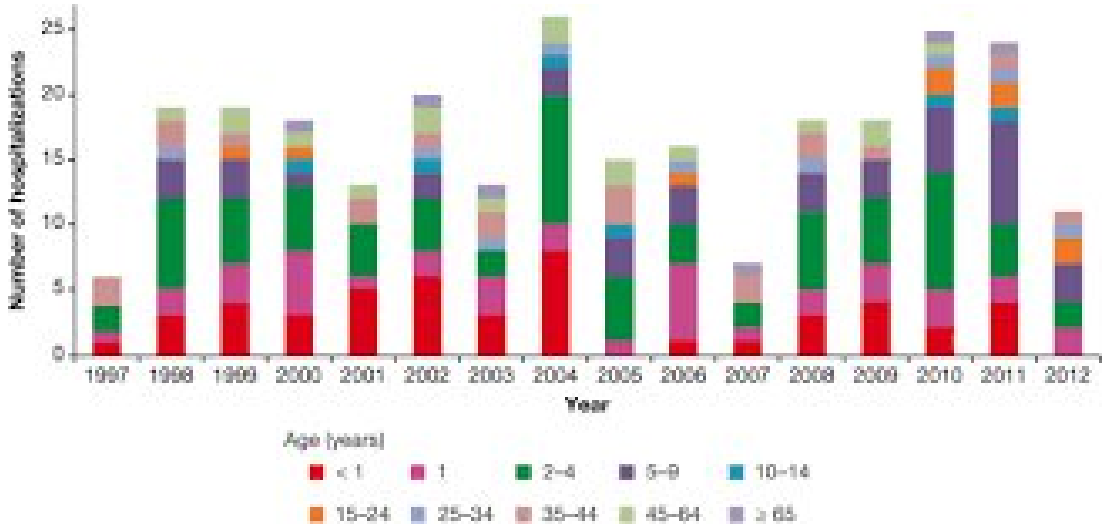


**FIGURE 1: Cases of chickenpox reported annually in Mexico, from the year 2000 to the year 2012**

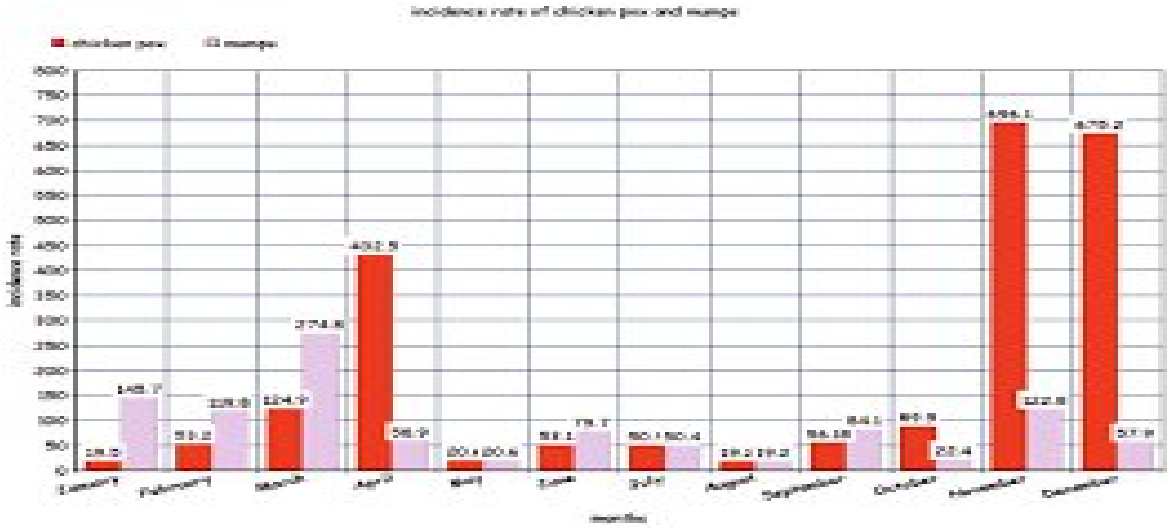

**FIGURE 2: Breakdown of cases of chickenpox in Mexico according to gender, 2003-2013**

57% of the total notification; children under the age of one year: 7%; children between the ages of one and four years: 29.6%; and children between the ages of five and nine years: 27.3%; children between the ages of ten and fourteen years old: 12.4%; and teenagers between the ages of fourteen and nineteen years old: 6.5%. The percentages for minors in the population aged 20 to 24 and 25 to 44 years were 6.3 and 10%, respectively. On the other hand, the information regarding chickenpox notification was less than 1% for individuals 45 years old or older. Ten A quartile distribution was carried out by a federal entity to analyse the behaviour of chickenpox. Following this, it was discovered that the states of greater notification, which are above the Q3 (n=160,925 cases of chickenpox), were Tamaulipas, Chihuahua, Nuevo León, Jalisco, Guanajuato, City of Mexico, State of Mexico, and Veracruz. These states were found to have the highest number of cases of chickenpox. Baja California Sur, Zacatecas, Nayarit, Colima, Morelos, Tlaxcala, Tabasco, and Campeche had the lowest number of chickenpox cases (n=68,861). In contrast, the states between Q1 and Q3 made up the remaining fifty per cent of the total. Ten The distribution of hospital discharges by varicella was analysed from 2004 to 2012 based on the institutions of each sector, including the Ministry of Health (SSA), the Mexican Social Security Institute (IMSS), the Institute of Mexican Social Security (IMSS) Opportunities, the Institute of Security and Social Services of State Workers (ISSSTE), Petróleos Mexicanos (Pemex), and the Secretary of the Navy (Semar). However, for the case that was specific to the Ministry of Health, this was analysed from 2000 to 2013. During the years 2004-2012, there were a total of 17,398 discharges that were attributed to chickenpox. When quartiles distributed these discharges according to the various federal entities of the country, it was discovered that the states with the highest notification were Tamaulipas, Sonora, Nuevo León, Jalisco, Mexico City, State of Mexico, Guanajuato, and Veracruz. Zacatecas, Baja California Sur, Nayarit, Colima, Tlaxcala, Morelos, and Hidalgo were

the states that received the least amount of notification. In contrast, the remaining fifty per cent of the states remained in an average notification between the first and third quarters. ten The allocation of expenditures by institution had a similar behaviour during the period that was analysed (2004-2012): the SSa was responsible for notifying 47% of discharges due to chickenpox, followed by the IMSS and IMSS Oportunidades (45%), the SITE (5.2%), Semar (2.2%), and Pemex (1%). Regarding the discharge of chickenpox patients based on the kind of disease, 2.5% were associated with pneumonia, 4.6% were associated with meningoencephalitis, 18% were related to other complications, and 75% did not have any issues. ten The epidemiological behaviour of national notification was utilised on a scale of cases per unit of time from the year 2000 to 2013 and each epidemiological week to provide a description of the epidemic pattern and seasonality of chickenpox. With a value that was larger than 12,500 cases each epidemiological week, the highest peaks that were attained occurred in the 2000s, 2004, 2008, and 2011, as can be shown. On the other hand, the values that were reached were significantly lower. Twenty-five thousand cases were reported annually for each epidemiological week, the lowest notification rate. In addition, it was discovered that the maximum number of cases were recorded across the entire nation over the period of epidemiological week 11 to week 22 (figure 3). This corresponds to the months of March to May.

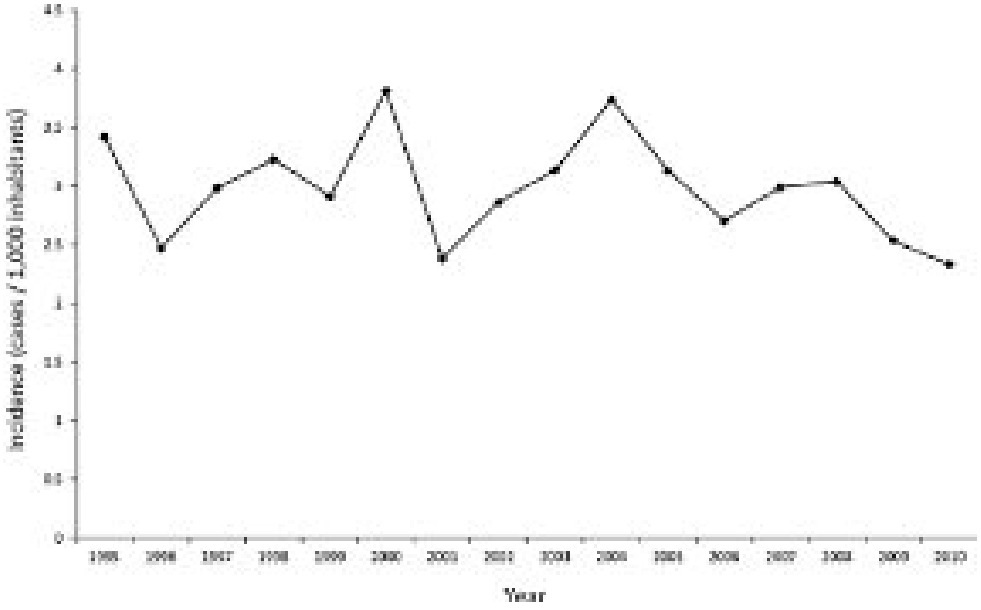


**FIGURE 3: Epidemic pattern and seasonality of chickenpox in Mexico, 2000-2013**

A total number of patients that were discharged from the hospital with a diagnosis of During the 14 years that were investigated, HZ was 7 042. As a result of Considering that the notification was not consistent throughout, the distribution of the number of discharges according to a pattern If it was discovered that the states of the quarter fell into The Chihuahua, Sinaloa, and Chihuahua who reported the greatest expenses In addition to Jalisco, Mexico City, Guanajuato, Puebla, and Oaxaca, that is Veracruz. The states that received the least amount of notification were Aguascalientes, Baja California Sur, Nayarit, and Colima are, the states Morelos, Tlaxcala, Querétaro, and Quintana Roo; sixteen Mexican states. Most of the remaining firms received an average notification (between Questions 1 and 3 (figure 4) Ten The organisations who disclosed their expenditures are as follows: There was a 51.7% correlation between HZ and IMSS and IMSS Opportunities. Then 33.4% of the expenses that the Secretariat recorded for the period according to the ISSSTE, and 11.54% by the Department of Health. That being said, Pemex and Semar's data were just 2.95 and 1.32%, respectively. When it comes to high-frequency discharges, the groups individuals who were registered were the ones whose ages could be analysed. According to the Ministry of Health. It is important to bring attention to the increases. certain constants are seen in the age groupings of 45 to 49 years (n = 120), between the ages of 50 and 59 (n = 304), and the highest peak which occurred between those who are 65 years old or older (n=797); this particular group is more prevalent 1.3:1.11 is the ratio that is found in females. In terms of HZ discharges according to the type of situation, 72 per cent of the cases were cases that did not involve any complications; the remaining cases included neuralgias and other conditions. 11 per cent were owing to HZ, 7 per cent due to ocular HZ, and meningoencephalitis due to disease, various problems, and HZ (5.4%) make up the remaining 5.4%.

1.8% of the total was dispersed (figure 5). The average number of days that had passed was another component that was examined. length of stay in the hospital dependent on the nature of the ailment, both in individuals whom the Ministry of

Health has identified as being
All of the other organisations that are part of the sector. This is the greatest number of
Meningoencephalitis was diagnosed after a mean of 13.3 days had passed.
SSa and 13.2 from other universities) and second place in the academic competition
(SSa: 6.4 days; other institutions: 6.8) was for the HZ that was circulated. Every other different kind of HZ condition exhibited a fluctuating pattern and was comparable for both the Secretariat of About the health of the other establishments (ranging from 5.8 to 4.5),
number of days spent in the ICU)11


**FIGURE 4: Discharges of herpes zoster according to condition, Spain, from 2000 to 2013**

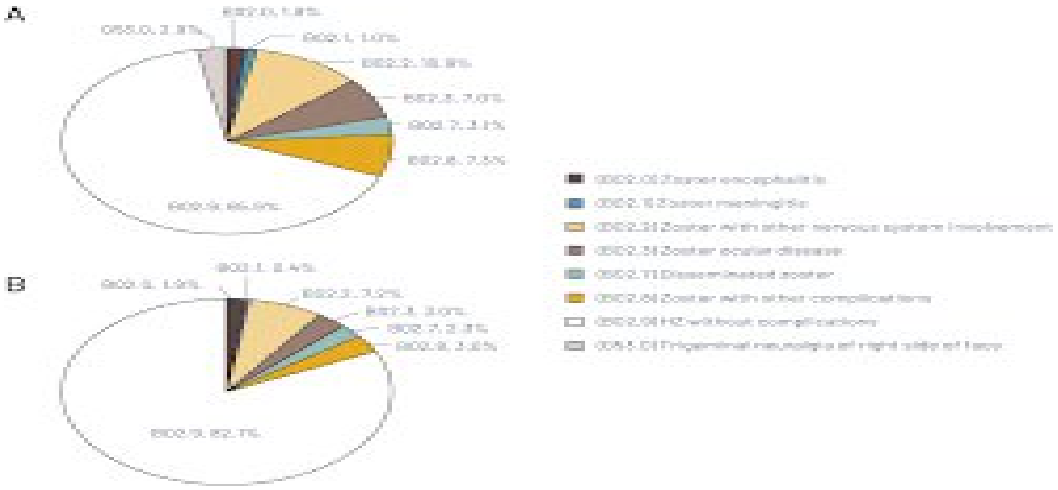


**FIGURE 5: The discharges caused by herpes zoster (HZ) according to the type of disease. From 2000 to 2013, Mexico**

It is easy to get chickenpox in the majority of cases.
Expenditure reports indicate that there is a seven per cent influence on the system, which includes the central nervous system and the respiratory system. This can result in the patient's death or a significant handicap.111 How the chickenpox virus behaved in Mexico during the winter
A cyclical pattern of epidemics occurred every three to four years over the period that was researched. This variation is consistent with reports published in the publications of France, New Zealand, and Scotland. These records record a periodicity of two to five years, with the majority of instances occurring around the months of March to May. ages 12-14. The findings of this investigation indicate that there is a correlation between the states that had the largest number of discharges due to HZ and those states that had the highest number of cases of chickenpox. Considering that chickenpox is a primary illness caused by the varicella-zoster virus in childhood, reactivation of HZ in older ages in the same federative units could be one explanation for this phenomenon. ten, eleven Even though the majority of HZ discharges are not problems (72%), 22% of patients showed signs of neuralgia, eye illness, or meningoencephalitis. These are all serious conditions that

increase the likelihood of acquiring a handicap, which can hurt the quality of life of these persons. Additionally, the cost of medical care for an average number of days spent in the hospital ranges from 6.4 to 13.3 days, which is a significant amount of money.111 In Mexico, the age groups most likely to be affected by HZ are those over 45 years old, with the majority of those afflicted being over 65 years old. The presence of the virus is more prevalent in women, with a ratio of 1.3:1, which is a condition that is observed in other Latin American countries, such as Brazil. 15 In order to determine the significance of the vaccination in preventing chickenpox in children, it would be of tremendous use to evaluate its importance. Several papers published in the medical literature have shown that the prevalence of HZ in the adult population might be connected to the immunisation habits practiced during infancy. Getting vaccinated at a young age helps prevent people from contracting chickenpox and strengthens immunity gained during infancy but does not remain in adults.

The use of the vaccination to prevent chickenpox, on the other hand, has been shown to protect the older population from developing HZ and postherpetic neuralgia, according to the findings of other authors who have presented their findings. For this analysis, there is not a single report of instances that were treated in outpatient clinics. Considering that these findings are an underestimation of the actual number of cases, the severity of the disease in Mexico may be even more severe than previously thought. The most significant limitation of this study is the possibility of under-registration of both the SUIVE and the discharge data that Sinais gave for instances of chickenpox. "TO" In turn, we believe that the limitation for cases of HZ may be greater. This is because it is not a sickness that requires mandatory notification, and the only cases that are hospitalised are those that are complicated. According to us, this is an underestimation of the extent of this health concern.

## 2. CONCLUSION:

Viruses like chickenpox and shingles present significant challenges to public health efforts. Despite advancements in medical science, these viruses remain persistent threats due to various factors, such as their ability to cause acute and chronic health issues, their potential for transmission, and the complexities surrounding vaccination and treatment.

Viruses like chickenpox and shingles can cause various health complications, from mild discomfort to severe illness. Chickenpox, although typically considered a childhood illness, can lead to more severe symptoms and complications in certain populations, such as immunocompromised individuals or adults who contract the virus for the first time. Moreover, the reactivation of the varicella-zoster virus, which causes chickenpox, can result in shingles—a painful condition that can lead to long-term nerve damage and decreased quality of life. Secondly, these viruses pose challenges in terms of transmission. Chickenpox, for instance, is highly contagious and can spread easily through respiratory droplets or direct contact with the rash. This poses particular risks in settings where individuals are nearby, such as schools or healthcare facilities. Additionally, while shingles are not directly contagious, the responsible virus can be transmitted to individuals who have not had chickenpox or been vaccinated against it, leading to chickenpox rather than shingles. Furthermore, public health efforts to control these viruses are complicated by vaccine availability, efficacy, and uptake. While vaccines for chickenpox and shingles exist, achieving high vaccination rates in populations can be challenging for various reasons, including vaccine hesitancy, access issues, and concerns about vaccine safety. Additionally, the effectiveness of vaccines against these viruses may decrease over time, necessitating booster doses or alternative vaccination strategies. In conclusion, viruses like chickenpox and shingles continue to present difficulties for public health. Efforts to mitigate the impact of these viruses require a multifaceted approach, including robust vaccination programs, public education initiatives, and research into improved prevention and treatment strategies. By addressing the challenges posed by these viruses, public health authorities can work towards reducing the disease burden and improving communities' overall health and well-being.

## REFERENCES

1. Coughlin, S. S. (2012). Anxiety and depression: linkages with viral diseases. *Public Health Reviews*, *34*, 1-17.

2. Curran, D., Patterson, B. J., Carrico, J., Salem, A., La, E. M., Lorenc, S., Hicks, K. A., Poston, S., & Carpenter, C. F. (2023). Public health impact of recombinant zoster vaccine for prevention of herpes zoster in US adults immunocompromised due to cancer. *Human Vaccines & Immunotherapeutics*, *19*(1), 2167907.

3. Fairley, C. K., & Miller, E. (1996). Is varicella-zoster virus epidemiology a changing scene? *Journal of Infectious Diseases*, *174*(Supplement_3), S314-S319.

4. Gabutti, G., Valente, N., Kuhdari, P., Lupi, S., & Stefanati, A. (2016). Prevention of herpes zoster and its complications: from the clinic to the real-life experience with the vaccine. *Journal of Medical Microbiology*, *65*(12), 1363-1369.

5. Giubilini, A. (2020). Using individuals as (mere) means managing infectious diseases without vaccines. Should we purposely infect young people with coronavirus? *The American Journal of Bioethics*, *20*(9), 62-65.

6. Gnann Jr, J. W. (2002). Varicella-zoster virus: atypical presentations and unusual complications. *The Journal of Infectious Diseases*, *186*(Supplement_1), S91-S98.

7. Hu, G., Du, H., Liu, Y., Wu, G., & Han, J. (2022). Herpes B virus: History, zoonotic potential, and public health implications. *Biosafety and Health*, *4*(04), 213-219.

8. Kennedy, P. G., Mogensen, T. H., & Cohrs, R. J. (2021). Recent issues in varicella-zoster virus latency. *Viruses*, *13*(10), 2018.

9. Lin, F., & Hadler, J. L. (2000). Epidemiology of primary varicella and herpes zoster hospitalisations: the pre-varicella vaccine era. *Journal of Infectious Diseases*, *181*(6), 1897-1905.

10. Malm, H., & Navin, M. C. (2020). Pox parties for grannies? Chickenpox, exogenous boosting, and harmful injustices. *The American Journal of Bioethics*, *20*(9), 45-57.

11. McElhaney, J. E., Verschoor, C., & Pawelec, G. (2019). Zoster vaccination in older adults: efficacy and public health implications. *The Journals of Gerontology: Series A*, *74*(8), 1239-1243.

12. Newman, A. M., & Jhaveri, R. (2019). Myths and misconceptions: varicella-zoster virus exposure, infection risks, complications, and treatments. *Clinical therapeutics*, *41*(9), 1816-1822.

13. Rajan, P., & Rivers, J. K. (2001). Varicella zoster virus. Recent advances in management. *Canadian Family Physician*, *47*(11), 2299-2304.

14. Steiner, I., Kennedy, P. G., & Pachner, A. R. (2007). The neurotropic herpes viruses: herpes simplex and varicella-zoster. *The Lancet Neurology*, *6*(11), 1015-1028.

15. Swali, R., Wiggins, C., Farooq, S., Shah, R. A., & Limmer, E. (2021). Reemerging Viral Infections: Implications of Lack of Vaccination. In *Overcoming Antimicrobial Resistance of the Skin* (pp. 111-129). Springer