



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Climatic Seasonal Variation Of The Occurrence Of Respiratory Tract Disease Of North Eastern, Nigeria

A.G. John, and Ishaya Luka
Adamawa State Polytechnic Yola
Department of Disaster Management

ABSTRACT

The study examines the climatic seasonal variation of the occurrence of respiratory tract disease of north east Nigeria, the geographical distribution and seasonal variation of respiratory tract infection RTIs disease are significant evidence that their occurrence is linked to weather and climate, its therefore pertinent to examine the seasonal variation of respiratory tract disease occurrence with respect to climate. Data were obtained from Nigerian metrological station NiMETs and Specialist hospital for 30 years' duration analysis of variance was used to assess seasonal variation of occurrence of RTI in relation to climatic condition the result of the analysis of variance ANOVA reveal that there is significant seasonal variation of the occurrence of RTI in the study area at P 0.000, 0.000, 0.002 and 0.000 of bronchitis, cold, pneumonia and Asthma respectively. In the same vein whooping cough P 0.097 which indicates insignificant relationship with weather and climate the result of the analysis of variation show significant seasonal variation occurrence in RTI disease at 0.005 level. Finding from the result show minimum temperature is related to the prevalence of lower respiratory tract infection, these effects should be considered in planning health action to prevent RTI infection and people should stop exposing themselves to weather element, finally public information on disease, environment and climate should be advocated.

KEY WORD: disease, climate, occurrence and variation

INTRODUCTION

The characteristics, geographical distributions and seasonal variations of many infectious diseases are significant evidence that their occurrence is linked to weather and climate. Climatic variables such as temperature, precipitation, humidity and sunshine hours affects the life cycle of many pathogens and vectors and this can potentially affect the timing and intensity of disease outbreaks (Beniston, 2019). Human societies have had long experience of naturally occurring climatic flow. This climatic flow has influence different diseases which affect man and his livelihood. More acutely, disaster and disease outbreaks have occurred very often in response to extremes of regional climate cycle such as the El Nino/Southern Oscillations (WHO, 2019).

Climate can affect human health directly or indirectly through changes in ranges of disease vectors, water borne pathogens, water quality and food availability and quality. Climatic factors are important determinant of various vector borne diseases and many infectious diseases (WHO, 2019). Ferrar (2019) and Farley (2019) opined that diseases that are prevalent in or unique to tropical and subtropical region, are less prevalent in temperate climate due in part to the occurrence of a cold season. This is evidence in the differences in climatic conditions of the tropic and temperate regions.

More so, the periodic or seasonal nature of outbreaks of some human disease suggests that climatic conditions play an important role in their seasonal variation (Adebayo, 2020). These include common disease such as malaria, asthma, cough, meningitis and other respiratory diseases as well as other major killer such as malnutrition and diarrhea (WHO, 2020). The Director General of the World Health Organization gave a report on world health day (WHD, 2019) that human beings are been exposed continually to the effects of climate sensitive diseases which kill in millions. The medical profession in its efforts to combat seasonal disease has long recognized the power of climatic element such as precipitation in helping the breeding of vectors and pathogen.

Respiratory tract infectious diseases are among many of the world's most common and serious health problems. It is responsible for at least more than a million deaths every year in the world majority of which occurs in the most resource poor countries (Laah and Zubairu, 2020). Global health Report (2021) further stressed that approximately 80 percent of these disease in the world are recorded in Africa.

Our personal health may seem to relate mostly to prudent local environmental exposures and health care access, sustained population health requires the life supporting services of the earth. Human population depend on the supplies of food and water, freedom from excess infectious diseases and the physical safety and comfort conferred by climatic stability. The world’s climate system is fundamental to this life support (WHO, 2019).

Human societies and population have had a long experience of naturally occurring climatic flow right from time in memorial. More acutely, disaster and disease have occurred often in response to extremes of regional climatic trend. Climate is an inevitable dominant element of man’s environment and a very influential factor of his wellbeing. Its critical elements such as temperature, rainfall and humidity can influence diseases. Although medical science has made remarkable progress in fighting diseases through modern technology, the health of the human population is still influenced to a great extent by weather and climate. It’s also good to know that environmental conditions that favor persistence of the vectors that transmit most of these diseases need also to be considered. This paper is therefore, designed to address this problem by examining the pattern, of climatic variability, and the prevalence of respiratory tract infection.

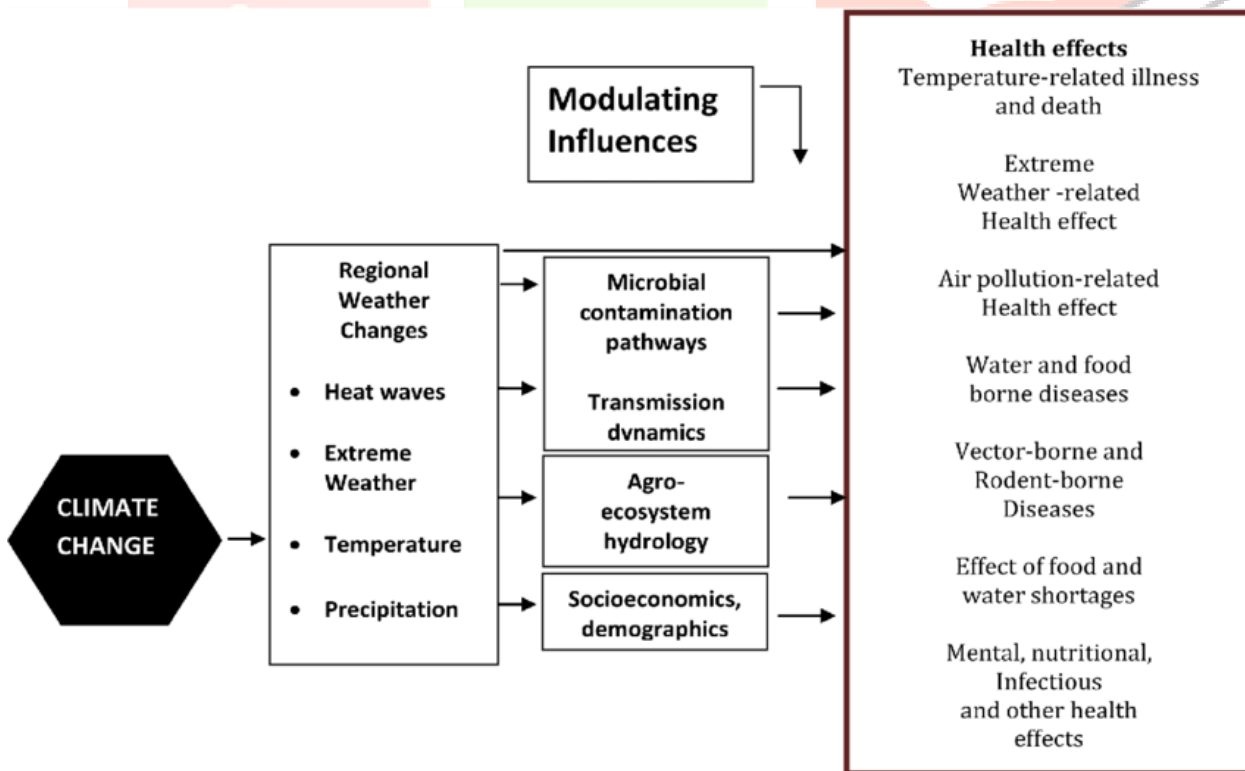


Fig 2.0: Human health and climate change model

Source: Adapted from Research gate .net (2019)

METHODOLOGY

Type and Source of Data

The type of data for this study is secondary in nature, which was sourced through the documented daily record of national meteorological station. In which the climatic data obtained are categorized based on element and that of respiratory tract diseases which was obtained from hospital record of outpatient.

Population and Sample Size

The populations of this study consist of entire population of North East Metropolis in which the metropolis is divided into six ward, namely Gombe, Bauchi, Taraba, Adamawa, Yobe and Borno. On the other hand, the sample size of the study is (250) out of (400) total population of the study,

Sampling Technique

Stratified and purposive sampling technique were employed. This helped in sampling the ward through which the relevant sampled respondents of the study were being selected. As such, from Age 1 year old to 80 years old..

Technique for Data Analysis

Analysis of variance was used to analyze the relationship between climatic variable and respiratory tract disease occurrence in the study area

RESULT AND DISCUSSIONS

Table 1 ANOVA table showing Seasonal variation of the occurrence of RTI of reported cases of disease in the study area.

Disease (RTIs)		Sum of Squares	df	Mean Square	F	Sig.
Bronchitis	Between Groups	20888.822	2	10444.411	31.103	.000*
	Within Groups	29215.133	87	335.806		
	Total	50103.956	89			
Cold	Between Groups	285312.289	2	142656.144	36.998	.000*
	Within Groups	335456.333	87	3855.820		
	Total	620768.622	89			
Pneumonia	Between Groups	1968934.022	2	984467.011	6.976	.002*
	Within Groups	12277398.033	87	141119.518		
	Total	14246332.056	89			
Whooping Cough	Between Groups	6600.600	2	3300.300	2.391	.097
	Within Groups	120066.300	87	1380.072		

	Total	126666.900	89			
Asthma	Between Groups	15130.067	2	7565.033	26.626	.000*
	Within Groups	24718.433	87	284.120		
	Total	39848.500	89			

*Significant at 0.05

From the ANOVA table it can be deduce respiratory tract disease of Asthma, Bronchitis, Pneumonia and cold the result shows significant seasonal variation of their occurrence at significant level of 0.05 in the study area while whooping cough show insignificant level of relationship with climatic element

Conclusion

This paper revealed that, the pattern of climatic variables and RTI in the study area has relationship. Seasonal pattern of disease occurrence showed strong relationship with climate elements, while the annual pattern of disease occurrence declined rapidly due to the intervention of health agency. The result of the analysis of variance (ANOVA) discussed in this paper reveals that, there is significant seasonal variation of the occurrence of RTI in study area at conditions $P < 0.000$, 0.000 , 0.002 and 0.000 of bronchitis, cold, pneumonia and Asthma respectively. While whooping cough $p > 0.097$, this result shows it is insignificant in which the diseases does not follow season, this could be as a result and the nature of the vector and pathogen which does not require weather condition for their metabolic growth, but depend on other factors such as susceptibility of environment and heart condition.

Recommendations

The following recommendations were proposed based on the finding;

- i. Public awareness campaign should be carried out to create public information on disease, environment and climate
- ii. People should stop exposing themselves to weather elements
- iii. Urbanization which is obviously taken place in north east has its own effect. The town is growing without adequate town planning. Government need to plan the town in order to improve the health and sanitation of the residents.
- iv. The need to be enlightened about climate change, its effects and the means of mitigating or moderating its impact in order to reduce the influence of weather on common diseases.

- v. Finally, adequate and reliable knowledge of killer diseases in the study area should be call for national and international intervention.

REFERENCES

- Adebayo, A.A.(2020). Temperature Variability and Outbreak of Meningitis and Measles in Yola, Nigeria. *Global Journal of pure and Applied Science. ISSN-1118-0579 Vol.7, No.1, pp. 133 – 135*
- Beniston, M. (2019). Climatic Change: Possible Impact on Human Health: Science of the total environment SWISSMED WKLY
- Ferrar, J (2019). Manson’s Tropical diseases. New edition Philadelphia: Saunders
- Farley, J (2019). Bilharzia: a history of imperial tropical medicine, paperback ed Cambridge University Press
- Global Health Report (2021).WHO Publication press. World Health organization bulleting of 2015
- Gellert. S, Hassan, B.Y. Melen, S. and Hiesgen, G. (2020). Malaria prevalence and outcome in the in-patients of the Pediatrics Department of state Specialist Hospital, Maiduguri. *Journal of Tropical Pediatrics. April 44(2).*
- Hassan, B.Y. (2019). Malaria prevalence and outcome in the in-patients of the Pediatrics Department of state Specialist Hospital, Maiduguri. *Journal of Tropical Pediatrics. April 44(2).*
- Lixia, L.(2019). Impacts of Global Environmental Change on Future Health Care in Tropical Countries. *British Medical Bulletin 1998:54(2):475-488*
- Laah, J and Zubairu, A. (2020). Examination of the Trend and Seasonal Variation in the Incidence of Malaria in Gwagwalada, Nigeria. A Paper Presented at the 49th Annual Conference of Association of Nigeria Geographers (ANG) held at University of Abuja, 14th-19th.
- WHO (2021). Climate Change and Human Health-Risk and Response World Health organization bulleting of 2016 France.
- WHO (2020).Document of Regional office for Europe. Economic cost of health impact of air pollution in Europe clean air, health and Copenhagen, Denmark.
- WHO (2020). The top 10 causes of death updated January 2017.World Health organization bulleting of 2016
- WHO (2020) Document on World Malaria Report. World Health organization bulleting of 2016
- WHO (2021). Climate change and human health. World Health organization bulleting of 2016
- WHO (2021). Cough and cold remedies for the treatment of acute respiratory infections in young children, Department of Child and Adolescent Health and Development, World Health Organization.
- WHO (2020). Bacterial etiology of serious infections in young infants in developing countries: results of a multicenter study. *Pediatric Infectious Diseases Journal 18: 17-22*

WHO (2019). The forgotten killer of children. Geneva, the United Nations Children fund (UNICEF)

WHD (2019). World health day, ageing and health: Climate Change and Human Health-Risk and Response, France.

Zubairu, I and Hassan, B. (2021). Examination of the Trend and Seasonal Variation in the Incidence of Malaria in Gwagwalada. Nigeria. A Paper Presented at the 49th Annual Conference of Association of Nigeria Geographers (ANG)

