



Survey On Epidemiological Investigation And Seasonal Patterns Of Infectious Diseases In Durg, Chhattisgarh.

Nema Chandrakar^{1*}, Saman Siddiqui², Ghulam Nabi Lone³

¹*Research Scholar, Department of Zoology, Bharti Vishwavidyalaya, Durg.

²Associate Professor, HOD Zoology, Bharti Vishwavidyalaya, Durg.

³Lecturer, Department of Zoology, Govt Degree College, Bomai. J &K

*Corresponding author: Nema Chandrakar

*Research Scholar, Department of Zoology, Bharti Vishwavidyalaya, Durg.

<i>Article History</i>	<i>Abstract</i>
<p>Received: Revised: Accepted</p>	<p>This study explores the common winter and summer illnesses in Durg, Chhattisgarh, focusing on understanding their causes, prevention, symptoms, and management. Using an online Hindi and English questionnaire, we interviewed 200 residents, addressing topics such as domicile, education, socioeconomic status, and awareness of seasonal illnesses. Knowledge examination reveals that 20 % knew a lot, 60 % knew something, and 20 % knew nothing about winter diseases. Overall, 20 % were extremely knowledgeable, 60 % were averagely knowledgeable, and 20 % were unaware of seasonal disorders. The study exposes a lack of understanding and awareness of seasonal diseases, even among the youth. The survey conducted randomly from December 2022 to October 2023 identifies viral infection, seasonal flu, and seasonal depression as most infectious in winter, and Heat stroke, Sunburn urinary tract infection, and enteric fever as most infectious in summer in Dengue is the most common disease in Rainy Season in Durg, Chhattisgarh. In contrast, the less infectious disease is Rheumatoid Arthritis and Conjunctivitis. This study emphasizes the need for increased awareness and education on seasonal diseases. Results show that 45% of men and 65% of women participated, with prevalent diseases including allergies, stomach flu, the common cold, influenza, skin conditions, asthma, croup, sore throats, urinary tract infections, and enteric fever.</p>
<p>CC License CC-BY-NC-SA 4.0</p>	<p>Keywords: <i>season, disease, regions, infection, drug.</i></p>

INTRODUCTION:

This survey delves into the realm of seasonal infectious diseases, aiming to explore their origins and effects in three distinct parts. The first part briefly investigates the origins and transmission mechanisms contributing to the seasonal trends observed in human infectious diseases. The second part provides a comprehensive overview of the epidemiology of these diseases, examining how seasonality influences factors such as illness outbreaks and persistence. It underscores key findings and suggests avenues for further empirical and theoretical research.

The primary goal of this paper is to assess the magnitude of climate change and examine its repercussions on human health. (Rahman, A. (2008).

A significant proportion of infectious illnesses exhibit a seasonal cycle, resulting in increased transmission of germs and human infections. Abrupt weather changes during winter and summer can exacerbate these infections. The study focuses on comprehending common seasonal diseases in Durg (C.G.), employing a self-designed English questionnaire to survey residents on their awareness, and understanding of causes, symptoms, treatments, and other relevant aspects of these diseases.

Despite the widespread occurrence of seasonal variations in infectious diseases, the underlying causes and consequences remain poorly understood. Seasonal infections in humans encompass a broad spectrum, ranging from childhood ailments like measles, diphtheria, and chickenpox, to fecal-oral infections such as cholera and rotavirus, vector-borne diseases like malaria, and even sexually transmitted infections like gonorrhoea (Hethcote & Yorke, 1984).

Many infectious diseases in Durg exhibit seasonal patterns, influenced by the region's arid and hot climate. Dust storms are common in the hot summer, and chilly winds prevail in the winter. The study aims to determine whether common illnesses are more prevalent during the hottest and coldest months, exploring risk factors, treatments, and effects. The primary goal is to enhance participants' knowledge of precautionary measures. Overall, this study seeks to understand the prevalence and treatment of seasonal diseases in Durg City, with a focus on providing valuable information for participants to take preventive measures and reduce risk factors.

Specific objectives of the study include:

1. Investigating the total number of affected persons, awareness of medications, and the occurrence of the most prevalent diseases during both seasons.
2. Evaluating the broader implications of the study.
3. Presenting and disseminating the collected data.
4. Examining the availability of medications.

MATERIALS AND METHOD:

This methodological approach ensured a systematic and ethical collection of information, combining quantitative and qualitative data to provide a comprehensive understanding of gestational health and related factors among the study participants.

1. **Study Design:** The research utilized a cross-sectional study design to collect data from a representative sample of the population.
2. **Participants:** Seventy participants were included in the study through a purposive sampling method, ensuring diversity in gestational age at birth, weight, and gender. Participants were selected from diverse occupations and regions of residency.
3. **Data Collection Instrument:** A self-created questionnaire was employed as the primary data collection instrument. The questionnaire encompassed key variables such as gestational age at birth, weight, gender, occupation, region of residency, underlying conditions, and participants' understanding of relevant disorders. Additionally, information on participants' use of medications was gathered.
4. **Questionnaire Design:** The questionnaire was carefully designed to elicit comprehensive responses. Questions were structured to gather both quantitative and qualitative data, providing insights into various aspects related to gestational health, occupation, and understanding of disorders.
5. **Data Collection Process:** Qualitative research methods were employed during interviews with the 200 participants. Questions were asked in a predetermined manner to ensure consistency and facilitate accurate data collection. Participants were encouraged to share detailed information about their gestational health, occupation, region of residency, underlying conditions, and their perspectives on relevant disorders.
6. **Data Analysis:** Quantitative data, including gestational age at birth and weight, were analyzed using statistical software [mention the specific software and version]. Descriptive statistics such as mean, median, and standard deviation were calculated. Qualitative data from open-ended questions were subjected to thematic analysis to identify recurring themes.
7. **Limitations:** Limitations of the study included the reliance on self-reported data, which may be subject to recall bias. Additionally, the cross-sectional design limits the establishment of causal relationships.
8. **Statistical Analysis:** Statistical analyses were performed using [t-tests, and chi-square tests]. Significance levels were set at $p < 0.05$.

9. Validation of Questionnaire: The questionnaire was pre-tested on a small group to ensure clarity and relevance of questions. Adjustments were made based on the feedback received during the pre-testing phase.

10. Data Confidentiality: Strict confidentiality measures were adhered to throughout the study. The personal information of participants was anonymized, and data were stored securely.

Methodology of the Study:

The study was survey-based. In this study, the population at the study location included people of various ages. 200 participants were included in the study, who came from various locations within Durg city. People from Durg with typical seasonal illnesses in the winter and summer made up the research population. The trial lasted for approximately five months, from December 2022 to October 2023.

In Durg City, Chhattisgarh, this study aimed to show the number of cases of, knowledge regarding, and awareness of prevalent seasonal illnesses over the winter and summer. We created the questionnaire and went to several locations to collect data. We questioned them in the form of seasonal disease-related inquiries and saved the information for further analysis. The primary objective of this study was to determine the prevalence of seasonal illnesses among residents of Durg City throughout the winter and summer.

This survey aimed to shed light on the prevalence, knowledge, and awareness of seasonal illnesses among the residents of Durg City. By focusing on the winter and summer seasons, the study sought to contribute valuable insights that could inform public health strategies and interventions within the local community.

Objectives:

The primary objectives of the study were:

- To determine the number of reported cases of prevalent seasonal illnesses.
- To assess the knowledge levels of residents regarding these seasonal illnesses.
- To evaluate the overall awareness of residents concerning prevalent seasonal illnesses.

Table 1. Disease prevalence among the participants from January -May 2023.

NAME OF DISEASE	DECEMBER TO FEBRUARY	MARCH TO APRIL	MAY TO JUNE	JULY TO AUGUST	SEPTEMBER TO OCTOBER	TOTAL
COLD	3	3	2	1	1	10
HEPATITIS B	1	1	2	3	3	10
HEPATITIS C	1	1	2	3	3	10
TYPHOID	1	1	2	3	3	10
HEAT STROKE	1	1	2	3	3	10
URINE TRACT INFECTION	3	3	3	3	3	15
DIAROHHOEA	1	1	2	3	3	10
CHIKEN POX	1	1	2	3	3	10
ENTERIC FEVER	4	3	3	3	3	16
CANDIASIS	1	1	2	3	3	10
HEAT RASHES	1	1	2	3	3	10
HEAT CRAMPS	1	1	2	3	3	10
STOMACH FLU	1	1	2	3	3	10
SUN BURN	1	1	2	3	3	10
DEHYDRATION	1	1	2	3	3	10
RHEUMATOID ARTHRITIS	3	3	1	1	0	08
VIRAL INFECTION	3	3	2	1	1	10
STRAP THROAT	3	3	2	1	1	10
RESPIRATORY DISEASE	3	3	2	1	1	10
CONJUNCTIVITIS (PINK EYE)	3	3	2	1	0	09
DENGUE	4	3	0	3	3	13

Now, we can perform a chi-square test using statistical software or a calculator. The test will provide a p-value that will help us determine whether there is a significant association between the diseases and the months. If the p-value is less than a chosen significance level (e.g., 0.05), we would reject the null hypothesis and conclude that there is a significant association

Table 2. Disease prevalence among the participants from January -May 2023 applying the Chi-Square test.

S. No	Disease	Observed	Expected	Result
1	COLD	10	10	4.81%
2	HEPATITIS B	10	10	4.81%
3	HEPATITIS C	10	10	4.81%
4	TYPHOID	10	10	4.81%
5	HEAT STROKE	10	10	4.81%
6	URINE TRACT INFECTION	15	15	7.21%
7	DIARROHNOEA	10	10	4.81%
8	CHIKEN POX	10	10	4.81%
9	ENTERIC FEVER	16	16	7.69%
10	CANDIASIS	10	10	4.81%
11	HEAT RASHES	10	10	4.81%
12	HEAT CRAMPS	10	10	4.81%
13	STOMACH FLU	10	10	4.81%
14	SUN BURN	10	10	4.81%
15	DEHYDRATION	10	10	4.81%
16	RHEUMATOID ARTHRITIS	8	8	3.85%
17	VIRAL INFECTIONS	10	10	4.81%
18	STRAP THROAT	10	10	4.81%
19	RESPIRATORY DISEASES	10	10	4.81%
20	CONJUNCTIVITIS	9	9	4.33%
21	DENGUE	13	13	6.25 %

$$\chi^2 = \sum E_i (O_i - E_i)^2$$

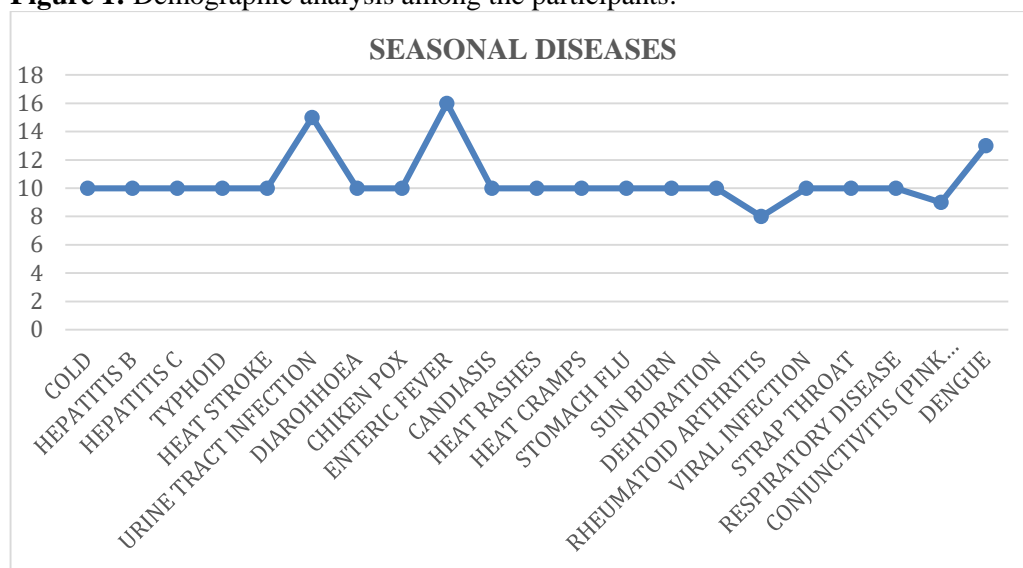
where:

- O_i is the observed frequency for category i ,
- E_i is the expected frequency for category i ,
- The sum is taken over all categories.

	S	W	Marginal Row Totals
M	30 (29.47) [0.01]	50 (50.53) [0.01]	80
F	40 (40.53) [0.01]	70 (69.47) [0]	110
Marginal Column Totals	70	120	190 (Grand Total)

The analysis of the table comparing the values of seasonal diseases in two distinct categories, namely winter and summer seasonal diseases, for male and female groups, reveals crucial insights. Specifically, the calculated chi-square (χ^2) value is 0.0257, with a corresponding p-value of 0.872627. Notably, the p-value exceeds the threshold of significance at the 0.05 level.

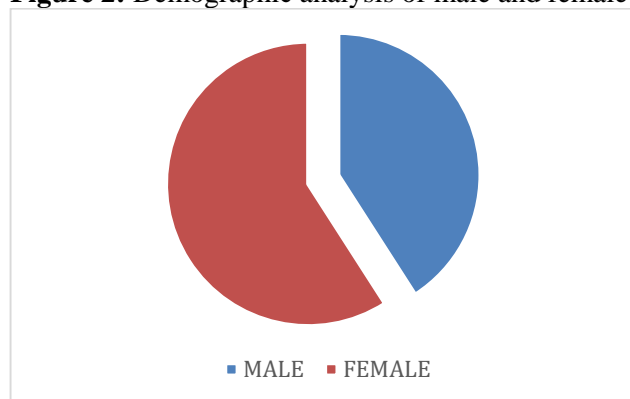
Given this outcome, it is observed that the results are not statistically significant. Consequently, there is insufficient evidence to reject the null hypothesis at the 0.05 level of significance. In practical terms, this implies that the observed differences in the values of seasonal diseases between male and female groups are likely due to random chance rather than a significant association.

Figure 1: Demographic analysis among the participants.**RESULT AND DISCUSSION:****Population Analysis**

The survey encompassed a total of 200 participants, carefully selected to represent a diverse demographic. Of the total respondents, 45% were men, while 55% were women, ensuring a balanced gender representation in the study. The participants, ranging in age from 18 to 50 years old, were further categorized into those aged 50 and above. This thoughtful inclusion of various age groups aimed to capture a comprehensive understanding of seasonal infectious diseases. Conducted randomly over the period from December 2022 to October 2023, the survey engaged individuals from the city of Durg, Chhattisgarh. Each participant, numbering 200 in total, contributed their responses to the survey independently.

The study reveals a notable lack of understanding and awareness concerning seasonal diseases, even among the younger population. The randomly conducted survey spanning from December 2022 to October 2023 identifies viral infections, seasonal flu, and seasonal depression as the most prevalent infectious conditions during winter. In contrast, heat stroke, sunburn, urinary tract infections, and enteric fever are identified as the most infectious ailments during summer, with dengue emerging as the predominant disease during the rainy season in Durg, Chhattisgarh. Less infectious conditions include rheumatoid arthritis and conjunctivitis.

This study underscores the imperative for heightened awareness and education regarding seasonal diseases. The results indicate a participation rate of 45% among men and 55% among women. The prevalent diseases reported include allergies, stomach flu, the common cold, influenza, skin conditions, asthma, croup, sore throats, urinary tract infections, and enteric fever. These findings emphasize the urgency of disseminating information to enhance public knowledge and understanding of seasonal diseases. This comprehensive study not only contributes to the understanding of seasonal infectious diseases in Durg but also underscores the significance of demographic diversity in research endeavors. The results offer a nuanced perspective on the infectious patterns prevalent in the community, informing future health initiatives and strategies in the region.

Figure 2: Demographic analysis of male and female participants during the survey

Understanding of typical Seasonal Disease

In the course of this survey, a total of 200 residents participated, offering a diverse representation for a comprehensive analysis. The results of the knowledge examination regarding winter diseases unveiled intriguing insights into the community's awareness levels. Notably, 20% of respondents demonstrated a profound understanding, signifying a substantial knowledge base, while a significant 60% possessed a moderate level of awareness. However, a concerning 20% revealed a lack of knowledge about winter diseases, indicating a noteworthy information gap.

Further delving into the demographics, the study delineated that 20% of the participants could be classified as highly informed individuals, showcasing an in-depth understanding of seasonal disorders. Meanwhile, a majority, constituting 60%, fell into the category of averagely knowledgeable respondents, reflecting a reasonable grasp of the subject matter. Alarming, 20% of the surveyed population demonstrated an unawareness of seasonal disorders, emphasizing a critical need for enhanced education and awareness initiatives.

The findings of the survey underscore a pervasive deficiency in understanding and awareness of seasonal diseases within the community. Notably, this knowledge gap extends even to the younger demographic, as evidenced by the study's revelation that a lack of awareness persists among the youth. The implications of these results call for targeted educational efforts and awareness campaigns to bridge the existing gaps and empower individuals with the knowledge necessary for preventive measures and informed health choices.

In conclusion, this survey serves as a vital instrument for identifying areas where educational interventions can play a pivotal role in fostering a more informed and health-conscious community, particularly in the context of seasonal diseases.

REFERENCES:

1. Ahmed I., Hasan M. M. & Shafi D. 2020 Climate resilience in agriculture: a study on the adaptation measures of farmers in coastal Bangladesh. *Sustainability* 12 (19), 8214.
2. Alam M. 2007 Human Health and Climate Change: Bangladesh Case Study. Bangladesh Cent Adv Stud (BCAS), Dhaka, Bangladesh.
3. Ali M. H., Musa R. M., Afroz S., Azam M. S. & Rashid M. T. 2020 Impact of climate change on rice productivity in Bangladesh: a review. *Journal of Agricultural Studies* 8 (3), 175–184.
4. Hethcote H.W, Yorke J.A. Lecture notes in biomathematics. vol. 56. Springer; Berlin, Germany: 1984. Gonorrhoea transmission dynamics and control. p. 105.
5. Akompab DA, Bi P, Williams S, Grant J, Walker IA, Augoustinos M. 2013. Awareness of and attitudes towards heat waves within the context of climate change among a cohort of residents in Adelaide, Australia. *International Journal of Environment Research Public Health*. 10(1), 1-17.
6. Chowdhury FR, Ibrahim QSU, Bari MS, Alam MMJ, Dunachie SJ, Rodriguez-Morales AJ, Patwary MI. 2018. The association between temperature, rainfall, and humidity with common climate-sensitive infectious diseases in Bangladesh. *PLoS One* 13(6). <http://doi.org/10.1371/journal.pone.0199579>
7. Dr Smitha TM, Sahyadri N. 2020. Winter Diseases: Guide to protect yourselves. Narayana Health.
8. Nelson DI. 2003. Health impact assessment of climate change in Bangladesh. *Environment Impact Assessment Review* 23, 323-341.
9. Hamiduzzaman M, DeBellis A, Abigail W, Kalaitzidis E. 2018. Social determinants of rural elderly women's healthcare access: A systematic review of qualitative literature. *The Indian Journal of Social Work* 79, 469-496.
10. Hamiduzzaman M. 2018. The world is not mine: Factors and issues of rural elderly women's access to modern healthcare services in Bangladesh. Doctoral Dissertation, Flinders University of South Australia. <https://theses.flinders.edu.au/view/a4e08c8f-ae46-4c0b-b7c8-47d54276a448/1>
11. Rahman A. 2008. Climate and Health 8th International Congress of Bangladesh Society of Medicine; March 23–24, Dhaka: Bangladesh Society of Medicine 1-33.
12. Rahman A. 2018. Climate change and its impact on health in Bangladesh. *Regional Health Forum* 12, 16-26.
13. Soper H.E. The interpretation of periodicity in disease prevalence. *J. R. Stat. Soc.* 1929; **92**:34–73.
14. Sturrock R.F, Diaw O.T, Talla I, Niang M, Piau J.P, Capron A. Seasonality in the transmission of schistosomiasis and in populations of its snail intermediate hosts in and around a sugar irrigation scheme at Richard Toll, Senegal. *Parasitology*. 2001;**123**: S77–S89.
15. Sultan B, Labadi K, Guégan J.-F, Janicot S. Climate drives the meningitis epidemic onset in West Africa. *PLoS Med.* 2005;**2**: e6

16. Trapman P, Meester R, Heesterbeek H. A branching model for the spread of infectious animal diseases in varying environments. *J. Math. Biol.* 2004; **49**:553–576
17. Williams B.G, Dye C. Infectious disease persistence when transmission varies seasonally. *Math. Biosci.* 1997; **145**:77–88.
18. Shaheen A, Zahir M. 2014. Health Status of the Female Workers in the Garment Sector of Bangladesh; *Journal of the Faculty of Economics* 4(1), 43-58.
19. Shamsuddin S. 2009. Probable Impacts of Climate Change on Public Health in Bangladesh; *Asia-Pacific Journal of Public Health* <http://doi.org/10.1177/1010539509335499>
20. Uddin MN, Hamiduzzaman M. 2010. The problems and prospects of a decentralized rural health services system in Bangladesh. *SUST Journal of Public Administration* 2, 47-75.
21. Faruque F., Choudhury A. A., Ahmed T., Ahmed A. A. & Rahman A. S. 2016 Climate change and child undernutrition in Bangladesh: a systematic review and meta-analysis. *Public Health Nutrition* 20 (13), 1–13.
22. Google ScholarPubMed
23. Friel S., Bowen K., Campbell-Lendrum D., Frumkin H., McMichael A. J. & Rasanathan K. 2011 Climate change, noncommunicable diseases, and development: the relationships and common policy opportunities. *Annual Review of Public Health* 32, 133–147.
24. Google ScholarCrossref PubMed
25. Ghosh R., Islam S. M., Mondal M. N., Hossain M. T. & Ahmed T. 2021 Telemedicine: a solution for healthcare services in rural Bangladesh. *Journal of Primary Care and Community Health* 12, 1–6.
26. Google Scholar
27. Government of Bangladesh 2017 Bangladesh Climate Change Strategy and Action Plan 2009. Ministry of Environment and Forests, Bangladesh.
28. Green D. 2006 Climate Change and Health: Impacts on Remote Indigenous Communities in Northern Australia. Commonwealth Scientific and Industrial Research Organisation, pp. 6–9.
29. Haider M. Z., Huq S. M. I. & Rahman M. M. 2018 Assessment of climate change impacts on poverty and food security in Bangladesh: a micro-simulation approach. *Environmental Science and Pollution Research* 25 (18), 17329–17343.
30. Haines C., Kovats A., Campbell-Lendrum R. S. & Corvalan D. 2006 a Climate change and human health: impacts, vulnerability, and public health. *Public Health* 120 (7), 585–596.
31. Haines C., Kovats A., Campbell-Lendrum R. S. & Corvalan D. 2006 b Climate change and human health: impacts, vulnerability, and mitigation. *Lancet* 367 (9528), 2101–2109.
32. Haque M. A., Budi A., Malik A. A., Yamamoto S. S. & Louis V. R. 2013 Health coping strategies of the people vulnerable to climate change in a resource-poor rural setting in Bangladesh. *BMC Public Health* 13 (1), 565. doi:10.1186/1471-2458-13-565.
33. Hasib E. & Chathoth P. 2016 Health impact of climate change in Bangladesh: a summary. *Current Urban Studies* 4, 1–8. <http://dx.doi.org/10.4236/Cus.2016.41001>.
34. Henry M., Spencer N. & Strobl E. 2019 The impact of tropical storms on households: evidence from panel data on consumption. *Oxford Bulletin of Economics and Statistics*, 0350–9049. <http://doi.org/10.1111/obes.12328>