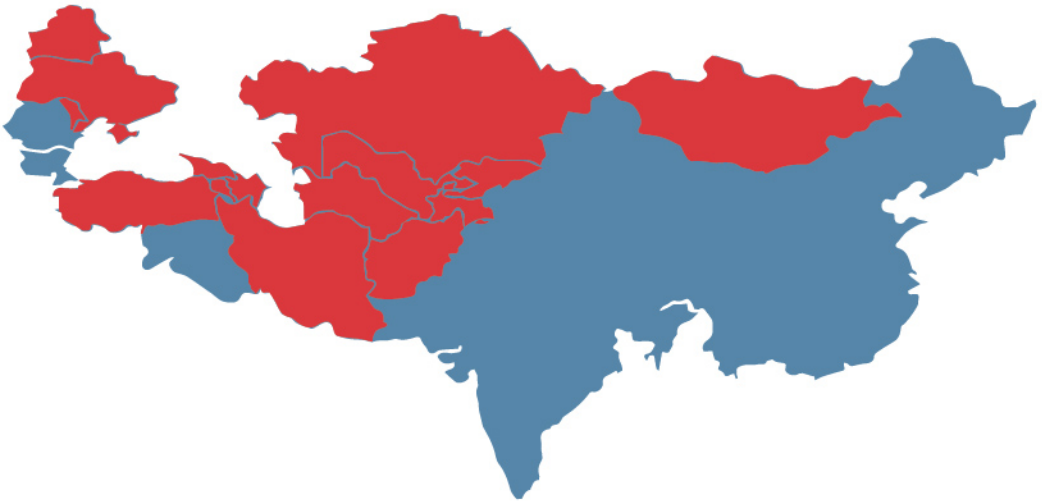
The Pan African Medical Journal

# Acute Watery Diarrhea (AWD) Outbreak in Surobi District of Kabul, Afghanistan, 2021: A Descriptive Case Study

Shoaib Naeemi, Khwaja Mir Islam Saeed, Mir Salamuddin Hakim

**Learning from Practice: Public Health Teaching Case Studies from Eastern Europe and Central Asia**



**ISSN: 1937 – 8688**

An Open Access Journal published by **The PAMJ**

EMPHNET
The Eastern Mediterranean Public Health Network

PanAfrican Medical Journal

# Acute Watery Diarrhea (AWD) Outbreak in Surobi District of Kabul, Afghanistan, 2021: A Descriptive Case Study

**Authors:** Shoaib Naeemi[1,&], Khwaja Mir Islam Saeed[2], Mir Salamuddin Hakim[3]

**Affiliations:** [1] Technical Officer, Eastern Mediterranean Public Health Network (EMPHNET) Afghanistan Country Office, [2] Technical Advisor for Afghanistan Field Epidemiology Training Program (AFETP), Eastern Mediterranean Public Health Network (EMPHNET) Afghanistan National Public Health Institute, Ministry of Public Health, [3] Technical Officer for Afghanistan Field Epidemiology Training Program (AFETP), Eastern Mediterranean Public Health Network (EMPHNET) Afghanistan National Public Health Institute, Ministry of Public Health

**[&]Corresponding author:** Shoaib Naeemi, MPH, Pharm-D, MLS

**Email:** snaeemi@emphnet.net
**Phone-number:** +93(0)764523311
**Physical address:** Cinema Pamir, Central Blood Bank, 5th Floor, Kabul City, Afghanistan

## Abstract

Descriptive epidemiology plays a crucial role in field or applied epidemiology by providing a foundation for understanding the distribution and determinants of diseases within populations. It involves the systematic collection, analysis, and interpretation of data to describe the occurrence of diseases, identify patterns and trends, and characterize the affected populations. Descriptive epidemiology helps epidemiologists and public health professionals identify high-risk groups, geographic areas of concern, and temporal variations in disease occurrence. It also provides valuable insights into potential risk factors, demographic characteristics, and modes of transmission. By examining the who, what, when, and where of disease occurrence, descriptive epidemiology forms the basis for generating hypotheses, designing targeted interventions, and guiding public health policies and practices. Ultimately, descriptive epidemiology is a fundamental tool in understanding the burden of disease, monitoring health trends, and identifying opportunities for prevention and control efforts in the field of epidemiology. This teaching case study has been developed for intermediate FETP tier to enhance their practical skills in analyzing surveillance data with focus on descriptive approach. Contents of this teaching case study has been adapted from an Acute Watery Diarrhea (AWD) outbreak occurred in Surobi district of Kabul province in Afghanistan during 2021. To use this case study, residents must have received didactic training session of "Descriptive Epidemiology" and be

familiar with concepts of surveillance data, outbreak detection and response as well as computer skills.

**Time allotted:** 1-2 Hours

**Language:** English

**Groups:** 3-5 residents per group

## Learning Objectives

After completing this exercise, the residents should be able to:

- List the components of descriptive epidemiology (Time, Place, Person and Clinical features) based on surveillance data
- Given data from a surveillance system, use tables and graphs to summarize the descriptive epidemiology
- Writing a brief report of findings

## Part-I:

## Introduction

According to the definition of World Health Organization, Diarrhea is defined as passage of three or more liquid or loose stools per day. Clinically, diarrhea is classified into three types of Acute Watery Diarrhea (AWD) which includes cholera, acute bloody diarrhea and persistent diarrhea. Infection such as bacterial, parasitic and viral, malnutrition, contamination of water sources and other miscellaneous causes lead to occurrence of diarrhea in an individual or communities [1]. Currently, diarrheal diseases are among ten leading causes of mortality around the world with majority of cases coming from low-and-middle income countries [2]. Among children under five, diarrhea is a leading cause of death, accounting for 9% of global deaths in this age group [3]. Most AWD cases with dehydration are caused by the cholera bacterium. Cholera is caused by a gram-negative bacteria called *Vibrio cholera* and usually found in water or in foods that have been contaminated by feces from a person infected with cholera bacteria. The O1 and O139 serotypes of cholera bacterium are mostly associated with outbreaks of AWD. The known transmission pathway of cholera is fecal-oral route. Common symptoms of AWD caused by cholera include diarrhea, abdominal discomfort and vomiting. Severe cholera leads to hypovolemia resulting in fluid loss, dry oral mucosa, decreased skin turgor and imbalance in electrolytes [4].

Afghanistan is accounted as one of the developing and low-income countries located in south Asia [5] with population of almost 40 million [6]. Currently, Afghanistan deals with double burden of communicable and non-communicable diseases and mortality [7]. According to the results of the multiple indicator survey conducted by UNICEF in Afghanistan between 2022 and 2023, the country's progress in basic sanitation and hygiene is a mix of achievements and

challenges. The survey reveals that approximately 68% of the population has access to basic drinking water. However, the figures for basic sanitation and hygiene are comparatively lower, with 44.5% of the population having access to basic sanitation facilities and 58.3% practicing basic hygiene practices. Additionally, the survey highlights a concerning statistic, with approximately 19.8% of the population still practicing open defecation, which poses health risks and underscores the importance of targeted interventions in this area [8]. Outbreaks of infectious diseases such as measles, cholera, Crimean-Congo Hemorrhagic Fever (CCHF), Dengue fever and Pertussis in Afghanistan is significantly reported on daily basis from surveillance sites across the country. Only during 9-month period (May 2022 to January 2023) an eye-catching number of 245,509 cases of AWD were reported from 613 sentinel surveillance sites of Afghanistan. Among total number of cases, 87 eventually died due to AWD (CFR=0.04%) and more than half of the cases were children under five years [9].

On September 13th, 2021, National Diseases Surveillance and Response (NDSR) Officer of Kabul province received an initial report of a suspected AWD outbreak by phone from the NDSR focal point of Surobi District Hospital (DH-040).

**Part – II**

**Questions**

**Question 1:** Describe and classify Epidemiology.

**Part – III**

**Methods**

Upon arrival to the scene, the Surveillance Support Teams (SSTs) have already line listed 46 individuals resembling to case definition of NDSR for AWD. Now, as field epidemiologist, you have been asked to provide prompt information and reliable data to proceed for response and control of this outbreak.

**Question 2:** What are the basic approaches of field epidemiologists?

**Question 3:** To summarize the descriptive epidemiology of this outbreak, which variables would you assess?

**Part – IV**

**Results**

Now that the line listing has been completed, you have to implement the approaches of count and divide to find out descriptive epidemiology of this outbreak. Therefore, the soft copy of the line list has been transferred to MS Excel format and further analysis is required.

**Question 4:** Develop a table consisting of clinical features, place and person characteristics of the attached line list. It should be noted that the line list file (.xls) is available in Annex 1 of this document. Students are encouraged to use pen and paper to analyze the data. MS Excel could be used for data analysis as well.

**Question 5:** Develop charts for age categories, sex and clinical features using the attached gridlines?

In your capacity as a field epidemiologist tasked with the responsibility of representing the temporal progression of this particular outbreak, you have been requested to utilize the attached comprehensive line list data to effectively characterize and analyze the outbreak's temporal patterns and trends over a specified period of time.

**Question 6:** What an epidemic curve tells about an outbreak?

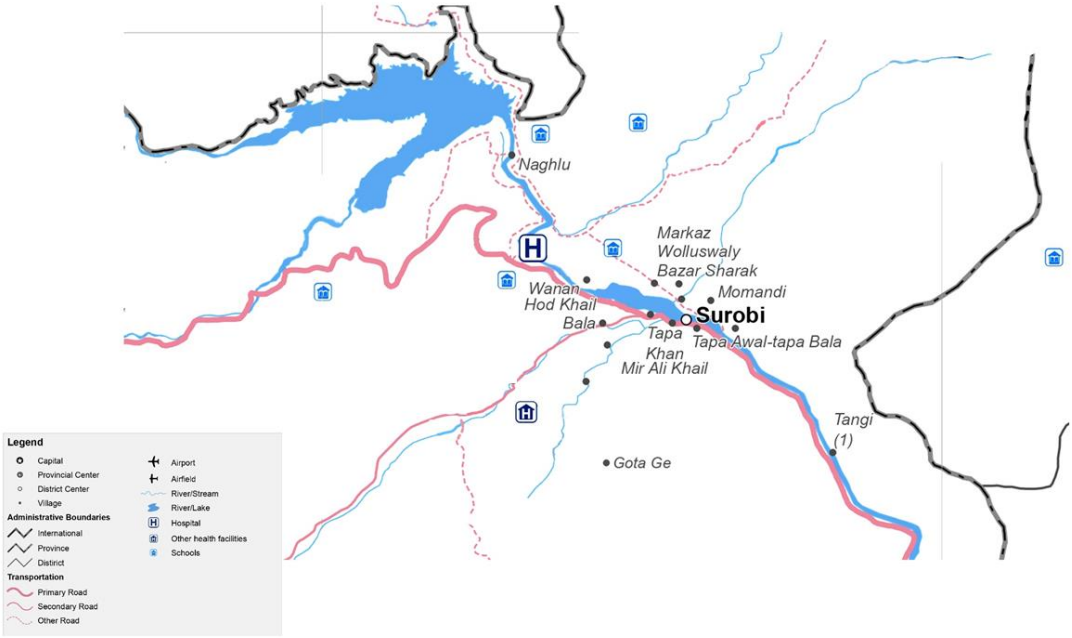
**Question 7:** To develop an epi curve, which steps should be considered?

**Question 8:** Develop an epi curve based on the attached line list. Note that epidemic curve should be developed based on "Onset of symptoms" variable for this case study.

**Question 9:** Interpret the time characteristics of this outbreak based on developed epi curve.

**Question 10:** Using the line list attached, develop a visual representation of the villages affected by this outbreak.

**Question 11:** To characterize this outbreak from place perspective, use the attached map to represent the cases from each village respectively.



**Part – V**

**Conclusion**

**Question 12:** Based on findings of this outbreak's descriptive epidemiology, write an interpretation of presented data.

**Question 13:** Based on findings of this outbreak's descriptive epidemiology, which recommendations will you give to prevent future outbreaks?

## Conflict of Interest:

The authors declare no conflict of interest related to this teaching case study.

# References:


1- Diarrhoeal disease [Internet]. World Health Organization; [cited 2023 Jun 29]. Available from: https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease
2- GBD 2016 Diarrhoeal Disease Collaborators. Estimates of the global, regional, and national morbidity, mortality, and aetiologies of diarrhoea in 195 countries: a systematic analysis for the global burden of disease study 2016. Lancet Infect Dis. (2018) 18:1211–28. 10.1016/S1473-3099(18)30362-1
3- Diarrhoea [Internet]. 2023 [cited 2023 Jun 29]. Available from: https://data.unicef.org/topic/child-health/diarrhoeal-disease/
4- Fanous M, King KC. Cholera. [Updated 2023 May 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470232/
5- Data for Afghanistan, low income  [Internet]. [cited 2023 Jun 29]. Available from: https://data.worldbank.org/?locations=AF-XM
6- Central Intelligence Agency; [Internet]. [cited 2023 Jun 29]. Available from: https://www.cia.gov/the-world-factbook/countries/afghanistan/
7- Neyazi N, Mosadeghrad AM, AbouZeid A. Non-communicable diseases in Afghanistan: a silent tsunami. Lancet. 2023 Jun 17;401(10393):2035-2036. doi: 10.1016/S0140-6736(23)01071-1. PMID: 37330735.
8- UNICEF Afghanistan. Multiple Indicator Cluster Survey (MICS) Executive Summary Report 2023 [Internet]. Available from: https://www.unicef.org/afghanistan/media/8501/file/MICS%20Executive%20Summary%20Report%202023.pdf
9- World Health Organization (WHO). Infectious Disease Outbreaks in Afghanistan: Weekly Report, Week 01, 2023 [Internet]. Available from: https://www.emro.who.int/images/stories/afghanistan/AFG_INFECTIOUS_DISEASE_OUTBREAKS_WEEK_01_2023.pdf?ua=1