

## Abstract

# Risk Factors Associated With Dengue in District Khyber, Khyber Pakhtunkhwa, Pakistan, From September 2 to November 24, 2019: Case-Control Study

Saba Ajam<sup>1</sup>, DVM, MSc (Hons); Muhammad Qasim Khan<sup>2</sup>, MSc, MPH; Nosheen Ashraf<sup>3</sup>, MBBS; Muhammad Wasif Malik<sup>3</sup>, MSc; Zeeshan Iqbal Baig<sup>4</sup>, MPH; Muazzam Abbas Ranjha<sup>3</sup>; Ambreen Chaudhary<sup>4</sup>; Mumtaz Ali Khan<sup>3</sup>, MSc, MPH; Jamil A Ansari<sup>4</sup>, MBBS; Aamer Ikram<sup>3</sup>, PhD

<sup>1</sup>Directorate of Livestock & Dairy Development Department, Peshawar, Pakistan

<sup>2</sup>Disease Surveillance and Response Unit, Peshawar, Pakistan

<sup>3</sup>National Institute of Health, Islamabad, Pakistan

<sup>4</sup>Field Epidemiology and Laboratory Training Program, Islamabad, Pakistan

### Corresponding Author:

Saba Ajam, DVM, MSc (Hons)

Directorate of Livestock & Dairy Development Department

138, Professor colony

Khyber Pakhtunkhwa

Peshawar

Pakistan

Phone: 92 3009096767

Email: [fvopeshawar@hotmail.com](mailto:fvopeshawar@hotmail.com)

## Abstract

**Background:** Dengue is a vector-borne disease endemic to Pakistan as well as to Khyber Pakhtunkhwa. A total of 300 confirmed cases of dengue were reported in District Khyber in 2019, where a prompt response was initiated by the Disease Surveillance and Response Unit. Subsequently, a study was planned to identify the risk factors associated with dengue and to propose recommendations for containment of the disease.

**Objective:** This study aimed to assess the risk factors associated with dengue in District Khyber and to provide recommendations for improving the existing system and preventing dengue.

**Methods:** A case-control study was conducted in District Khyber from September 2 to November 24, 2019. Cases were enrolled from health care facilities based on predefined criteria, which included the presence of clinical signs and symptoms as well as laboratory confirmation of dengue NS1 antigen. Controls were enrolled from the community at a case-control ratio of 1:2. Data were collected using a pretested questionnaire in face-to-face interviews.

**Results:** A total of 300 cases were enrolled; 87% (263) of cases were men. This study found that 45% (269/601; odds ratio [OR] 15, 95% CI 9.9-24.07;  $P < .001$ ) of enrolled participants did not use bed nets and 39% (236/601; OR 1.7, 95% CI 1.1-2.4;  $P < .001$ ) did not use mosquito repellents. A total of 39% (233/601; OR 16.6, 95% CI 11.11-24.93;  $P < .001$ ) of enrolled participants who tested positive for dengue were neighbors, 35% (213/601; OR 1.47, 95% CI 1.04-2.0;  $P < .001$ ) lived in a joint family, and 40% (241/601; OR 3.32, 95% CI 2.3-4.7;  $P < .001$ ) slept outdoors; these factors were significantly associated with dengue.

**Conclusions:** Dengue is a preventable disease and can be controlled by the proper use of bed nets and mosquito repellents, modification of sleeping habits, and improvement in family structure. Dengue management training for health care personnel and community awareness are recommended.

(*iproc* 2022;8(1):e36641) doi: [10.2196/36641](https://doi.org/10.2196/36641)

### KEYWORDS

bed nets; mosquito repellent

*Edited by Y Khader; this is a non-peer-reviewed article. Submitted 19.01.22; accepted 24.01.22; published 21.02.22.*

*Please cite as:*

*Ajam S, Khan MQ, Ashraf N, Malik MW, Baig ZI, Ranjha MA, Chaudhary A, Khan MA, Ansari JA, Ikram A  
Risk Factors Associated With Dengue in District Khyber, Khyber Pakhtunkhwa, Pakistan, From September 2 to November 24, 2019:  
Case-Control Study*

*iproc 2022;8(1):e36641*

*URL: <https://www.iproc.org/2022/1/e36641>*

*doi: [10.2196/36641](https://doi.org/10.2196/36641)*

*PMID:*

©Saba Ajam, Muhammad Qasim Khan, Nosheen Ashraf, Muhammad Wasif Malik, Zeeshan Iqbal Baig, Muazzam Abbas Ranjha, Ambreen Chaudhary, Mumtaz Ali Khan, Jamil A Ansari, Aamer Ikram. Originally published in Iproceedings (<https://www.iproc.org>), 21.02.2022. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in Iproceedings, is properly cited. The complete bibliographic information, a link to the original publication on <https://www.iproc.org/>, as well as this copyright and license information must be included.