

# High levels of mortality above the emergency threshold, Central African Republic: population-based mortality survey, 2020

\***Eve Robinson**<sup>1</sup>, Lawrence Lee<sup>1</sup>, Leslie Roberts<sup>2</sup>, Aurelie Poelhekke<sup>3</sup>, Xavier Charles<sup>1</sup>, Nell Gray<sup>4</sup>, Adelaide Ouabo<sup>1</sup>, Jorieke Vyncke<sup>4</sup>, Cono Ariti<sup>5</sup>, Mariette Claudia Adame Gbanzi<sup>6</sup>, Martial Tanguy Ouakouma<sup>7</sup>, Maura Daly<sup>3</sup>, Kate White<sup>3</sup>, Sam Templeman<sup>3</sup>, Mia Heijdenberg<sup>8</sup>, Maaïke Hersevoort<sup>1</sup>, Sibyl Jade Pena<sup>8</sup>, Monique Pereboom<sup>3</sup>, Anna Kuehne<sup>4,8</sup>

<sup>1</sup>Médecins Sans Frontières (MSF), Bangui, Central African Republic (CAR); <sup>2</sup>Columbia University, New York, USA; <sup>3</sup>MSF, Amsterdam, The Netherlands; <sup>4</sup>MSF, London, UK; <sup>5</sup>Cardiff University Medical School, Cardiff, UK; <sup>6</sup>Ministry of Health and of the Population, Bangui, CAR; <sup>7</sup>Central African Institute for Statistics and Social and Economic Studies, Bangui, CAR; <sup>8</sup>MSF, Berlin, Germany

[eveprobinson@gmail.com](mailto:eveprobinson@gmail.com)

## Introduction

The Central African Republic (CAR) has the second-lowest human development index globally and has long been described as being in a state of “silent crisis”. We planned a nationwide study to obtain reliable and comparable mortality data for CAR. Due to the COVID-19 pandemic, only the survey in Ouaka Prefecture proceeded.

## Methods

We conducted a two-stage cluster mortality survey between 9 March and 9 April 2020. We aimed to include 64 clusters of 12 households each, for a target sample size of 3,636 persons. We assigned clusters to communes proportional to population size and used systematic random sampling to identify cluster starting points from a dataset of buildings in each commune. We used a novel approach by: focusing on mortality only; adding an opening question about challenges experienced in the last year to build rapport and document general difficulties; and, for females aged 10-49 years, we included specific pregnancy-related questions to improve detection of neonatal and maternal deaths, and to estimate birth rate. The recall period ran from 26 May 2019 to the interview day (range 289-320 days). We coded reported challenges using a content analysis approach.

## Ethics

This study was approved by the MSF Ethics Review Board (ERB) and the national ERB of CAR.

## Results

We reached 50 clusters, including 591 participating households with a total of 4,272 individuals. We identified 160 deaths. Crude and under-five mortality rates (CMR, U5MR) were 1.33 (95% confidence interval, CI, 1.09-1.61) and 1.87 (95%CI 1.37-2.54) deaths/10,000 persons/day, respectively. The most common specified causes of death (COD) for individuals aged >5 years were violence (16.7%; n=20; 95%CI 7.7-32.5) and malaria/fever (9.9%; n=11; 95%CI 5.9-16.2). Amongst children aged <5 years, the most common causes were malaria/fever (30.5%; n=15; 95%CI 17.8-47.1), diarrhoea/vomiting (24.0%; n=11; 95%CI 11.9-42.7), neonatal deaths (11.9%; n=6; 95%CI 5.3-24.7), and respiratory infections (6.8%; n=3; 95%CI 2.1-20.1). Amongst females aged 10-49 years, 29.1% (95%CI 26.4-31.9%) were pregnant during the recall period. The birth rate was 59/1,000 population (95%CI 51.7-67.4), and the maternal mortality ratio was 2,525/100,000 live births (95%CI 825-5,794). Reported challenges included concerns about specific illnesses, access to healthcare, bereavement, lack of safe drinking water, insufficient means of subsistence, food insecurity, and violence.

## Conclusion

Mortality indicators seen here exceed previous estimates, and the CMR is above the humanitarian emergency threshold. New methods used in this study may have improved data completeness and quality. Violence is a leading COD, while other causes highlight poor living conditions and difficulties accessing healthcare and preventive measures; these findings are consistent with reported challenges. The high MMR, despite its lack of precision, alongside the high neonatal death rate and birth rate, call for accessible reproductive healthcare. If our results are generalisable to other regions of CAR, national mortality rates would be among the highest globally. The planned nationwide study should proceed as soon as feasible.

## Conflicts of interest

None declared.



**Eve Robinson**

Eve is a public health physician and epidemiologist from Ireland. She worked as a field epidemiologist for MSF's Operational Centre Amsterdam in the Central African Republic for 15 months in 2019 and 2020.