

BIG READ / SMOKELESS AND EFFICIENT

FIGHTING RESPIRATORY ILLNESS THROUGH IMPROVED COOKSTOVE

The device is saving rural women from a lifetime of misery

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Cooking should be enjoyable and support life, but not so for hundreds of women and girls in rural Kenya, who often undergo the ordeal of using firewood to make food for their families.

Rosalia Amweya's story tells it all. Her health suffered heavily, she says, from the smoke she constantly inhaled for hours daily while cooking on a traditional three-stone cooking stove, oblivious to the danger she was exposing herself to.

Like most women from Ichingo village in Kakamega county, where she lives, the 73-year-old grandmother says the deadly carbon monoxide she inhaled made her life miserable. "I started coughing incessantly and feeling weak. I could no longer stay in the kitchen for long enough to enjoy preparing meals for my family as before due to respiratory problems," she says.

Amweya, who at first did not know the dangers of cooking with firewood, says, "I am asthmatic, and the smoke inhalation only made the situation worse. The frequency of my hospital visits increased rapidly, and the doctors were worried about me."

She learned more about her condition when an NGO researched the impact of smoke inhalation in households in her area.

"They tested the amount of smoke in people's (mainly women) lungs and found out that many of us had been affected by the smoke we had been inhaling over the years as we cooked with firewood," she says.

However, Amweya's visits to the doctor for treatment have reduced since she started using improved cooking stoves.

Thanks to modern cookstoves, Amweya can continue her other business as a mother and grandmother without worrying that the children will get sick or burned while cooking.

"With the improved stove, my grandchildren can cook even when I am not around. Even the men can now stay in the kitchen when their wives cook because there is no smoke," she says.



ACUTE, CHRONIC EFFECTS

Dr Yubrin Gachemba, a Cardiology Fellow at NHS Grampian in the UK, said the effects of air pollution on the human body could be acute or chronic, depending on the duration of exposure and underlying conditions.

"It can be acute, especially if someone has an underlying respiratory illness, such as asthma," she said.

"They can then have an acute exacerbation of symptoms, like shortness of breath or frequent asthma attacks, but also just the irritation can happen from indoor biomass exposure."

She said the chronic effects are more concerning and could range from chronic respiratory illnesses like chronic obstructive pulmonary disease (COPD) to damage to the lungs and heart, increasing the risk of shock.

Gachemba said exposure to some of these hydrocarbons or nanoparticles can trigger the accelerated ageing of body organs.

The constant use of traditional cooking methods, such as open fires or rudimentary stoves, produces high

levels of smoke and other harmful emissions.

This leads to respiratory and other health problems, particularly for women and children who spend

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ROSALIA AMWEYA

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much time in the kitchen. About half of the global population and 90 per cent of rural households, almost all in developing countries, rely on solid biomass for cooking and heating.

The Ministry of Energy indicates that solid fuels remain the leading cooking energy in rural and peri-urban areas, where 68 per cent of residents rely on traditional biomass fuels.

These solid fuels are typically burned indoors in poorly ventilated structures and mostly inefficient stoves or open fires.

A review of household air pollution and biomass use in Kenya, published in the *Frontier Science* journal in 2022, showed that one in 10 women and children experienced coughing, wheezing, eye problems and headaches due to the use of wood fuel in Western Kenya.

The study showed that 86.9 per cent of the improved cook stoves contribute to a reduction in harmful emission levels compared to the traditional three-stone stove.

Gachemba encouraged using clean

biogases, though she noted that Kenya is still far from achieving this since more than 60 per cent of the population still relies on biomass and lacks access to clean energy due to poverty.

The cardiologist says indoor air pollution damages the airways, lungs and other body parts.

"When firewood, kerosene or plastic is burned, gases like carbon monoxide are released, which can cause acute poisoning by binding to red blood cells and preventing normal perfusion and gas exchange, potentially leading to death," she says.

"Some of these combustion materials, when released, go into the lungs and are inhaled as part of the gas. They can find their way into the bloodstream and provide a basis for complications such as lung cancer, heart disease and stroke."

Ventilation is essential when using biomass for cooking. The windows should be open for air circulation, Gachemba advises.

Other measures include promoting good housing models and improving social determinants of health,