



**An Example of a Culturally Sensitive Approach
to a Global Health Promotion Initiative:
Improving the Acceptance and Sustained Use of
Safer Cook-Stoves in the Guatemalan Highlands**

Nancy Nagib, MD
WellSpan Health Center for Global Health Education

A Silent Killer World-Wide



AMERICAN ACADEMY OF FAMILY PHYSICIANS

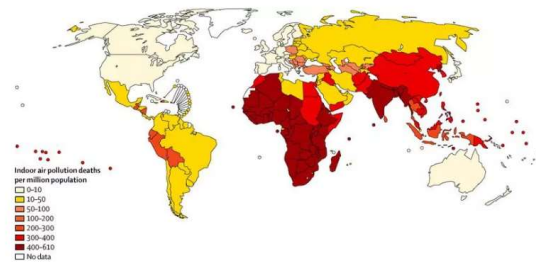
Learning Objectives

- 1) Understand the significance of the global health burden caused by household air pollution (HAP) from open fire cooking
- 2) Recognize impacts on health equity and development
- 3) Understand the need for culturally sensitive approaches to health promotion initiatives

2

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Indoor air pollution deaths (per million people)



Indoor air pollution deaths per million population. | (Gordon et al, 2014)

AMERICAN ACADEMY OF FAMILY PHYSICIANS



3

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Significance HAP

•Deaths from:

– AIDS in 2018:	770,000
–Malaria in 2017:	435,000
–HAP:	4,000,000

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Slide 4

NN1 Nagib, Nancy, 9/24/2019

NN2 World's population? 7.7 billion

3 billion people world-wide use unsafe cooking practices

Kerosene/ solid fuels (wood, crop waste, charcoal, coal, dung)

Open fires or inefficient stoves

Nagib, Nancy, 9/24/2019

Significance of HAP

- Major health outcomes: acute lower resp tract infections & COPD
- Pneumonia is a major cause of mortality in children <5 yo
 - 50% of cases caused by HAP.

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Mechanism of Pollutants

- Carbon Monoxide:
 - Binds to HGB, reducing oxygen delivery
- ↓
- Low birth weight
Increase in perinatal deaths

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Significance of HAP

- Stroke
- Ischemic heart disease
- Lung cancer
- Low birth weight
- TB
- Cataracts
- Nasopharyngeal/ laryngeal CA

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Mechanism of Pollutants

- Biomass Smoke Condensates:
 - Absorption of toxins into lens, oxidative changes
- ↓
- Cataracts

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Mechanism of Pollutants

- Small soot particles/ Sulfur Dioxide/ Nitrogen Dioxide
 - Bronchial irritation/ inflammation/ reactivity
 - Reduced immune response
 - Reduced muco-ciliary clearance
- ↓
- Wheezing/ reactive airway
 - Resp infections
 - COPD
 - Cardiovascular disease
 - Reduced Lung Function in children

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Impacts on Health Equity and Development

"Without a substantial policy change, the total number of people lacking access to clean fuels and technologies will remain largely unchanged by 2030."

12

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Impacts on Health Equity and Development



AMERICAN ACADEMY OF FAMILY PHYSICIANS

Impacts on Health Equity and Development

- Fuel gathering leads to:
 - Time consumption:
 - Limits women from income producing activities
 - Limits children from attending school
 - Women & children at risk of violence

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Impacts on Health Equity and Development

- Fuel gathering leads to:
 - MSK damage
 - Headaches
 - Back pain
 - Neck pain

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Impacts on Health Equity and Development



Sierra Leone 2017



Sugar Loaf Mountain

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Impacts on Health Equity and Development



AMERICAN ACADEMY OF FAMILY PHYSICIANS

How has the world addressed the global burden of disease caused by HAP?

AMERICAN ACADEMY OF FAMILY PHYSICIANS

World-Wide Efforts

- Gradual shift to cleaner fuels as countries become developed

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Barriers



AMERICAN ACADEMY OF FAMILY PHYSICIANS

World-Wide Efforts

- Lack of access to cleaner fuels
 - physical availability and cost
 - High oil prices
 - Increasing deforestation
- ↓
- Distribution of safer stoves

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Barriers

- Culture
- Heating source
- Protection from insects
- Lack of: cleaner fuels and \$\$\$
- Lack of knowledge of harmful effects
- Lack of resources to maintain stoves
- Difficulty installing/ maintaining stoves
- Stoves not conducive to large pots
- Pristine stove for special occasion

AMERICAN ACADEMY OF FAMILY PHYSICIANS

The Unfortunate Truth...

Despite wide distribution of safer stoves, many households resort to cooking over an open fire.

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Challenges



AMERICAN ACADEMY OF FAMILY PHYSICIANS



Failures in Global Health

Archives of Failures in Global Health

Global health works to solve big problems. We're bound to fail. Although failures can help us learn, we rarely seem to publish or discuss failed products and strategies in global health. This blog post aims to crowd source and compile a list of failures in global health.

"Although failures can help us learn, we rarely seem to publish or discuss failed products and strategies in global health..."

<https://naturemicrobiologycommunity.nature.com/users/20892-madhukar-pai/posts/51659-archive-of-failures-in-global-health>

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Stove Programs

- Minimal/ no education with stove distribution
- Document # stoves "installed" or "sold"
- What remains unknown:
 - 1) Success/ Failure of large-scale interventions
 - 2) Sustained use rates of the stoves
 - 3) The most successful ways of implementing improved stoves

AMERICAN ACADEMY OF FAMILY PHYSICIANS

HealthAffairs

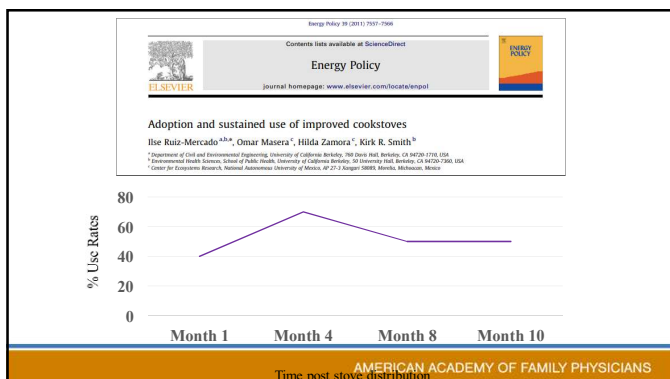
RESEARCH ARTICLE

Effect Of A Large-Scale Social Franchising And Telemedicine Program On Childhood Diarrhea And Pneumonia Outcomes In India

Manoj Mohanan, Kimberly S. Baker, Jeremy D. Goldhaber-Fickes, Grant Miller, Dayal S. Srinivasan, et al.

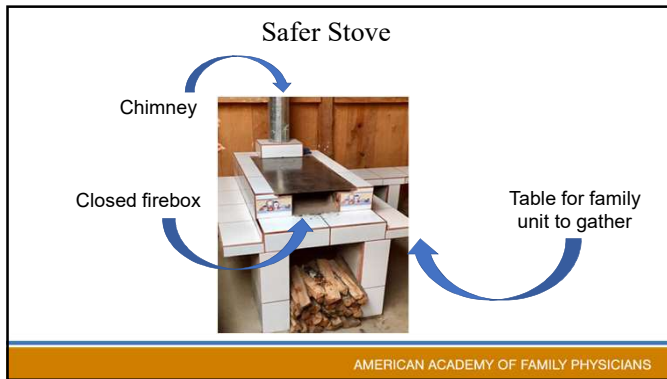
<https://doi.org/10.1016/j.jhealeco.2018.08.001>

AMERICAN ACADEMY OF FAMILY PHYSICIANS



How do we address HAP successfully?

AMERICAN ACADEMY OF FAMILY PHYSICIANS



Would a culturally sensitive approach improve the success rate of safe stove programs?

AMERICAN ACADEMY OF FAMILY PHYSICIANS

References

- Bruce N, Perez-Padilla R, Albalak R. Indoor air pollution in developing countries: a major environmental and public health challenge. *Bull World Health Organ.* 2000;78(9):1078-92.
- Home. (n.d.). Retrieved September 30, 2016, from <https://www.who.int/>.
- Impact Areas. (n.d.). Retrieved September 3, 2019, from <https://www.cleancookingalliance.org/impact-areas/>.
- Johnson, L. (2017, August 16). Three Billion People Cook Over Open Fires — With Deadly Consequences. Retrieved October 10, 2019, from <https://www.nationalgeographic.com/photography/proof/2017/07/guatemala-cook-stoves/#/04-dispatch-cook-stoves.jpg>.
- Mwisongo, A., & Nabyonga-Orem, J. (2016). Global health initiatives in Africa – governance, priorities, harmonisation and alignment. *BMC Health Services Research*, 16(S4), doi: 10.1186/s12913-016-1448-9
- Pulitzercenter. (2019, June 19). Cooking Up Pollution: The Health Crisis of Open Fires and Leaky Stoves. Retrieved September 3, 2019, from <https://pulitzercenter.org/builders/lesson/cooking-pollution-health-crisis-open-fires-and-leaky-stoves-23677#slideshow-8>.
- Thomas E, Wickramasinghe K, Mendis S, Roberts N, Foster C. Improved stove interventions to reduce household air pollution in low and middle-income countries: a descriptive systematic review. *BMC Public Health.* 2015 July 14;15:650 doi:10.1186/s12889-015-2024-7. .
- Trenchard, T. (2018, April 8). Life Doesn't Go On After The Mudslides in Sierra Leone. Retrieved September 3, 2019, from <https://www.npr.org/sections/goatsandsoda/2018/04/08/599526907/life-doesnt-go-on-after-the-mudslides-in-sierra-leone>.

AMERICAN ACADEMY OF FAMILY PHYSICIANS

Culturally Sensitive Approach

- Involve a *native* community health promoter
- Educate the community in their native language
- Offer a *locally manufactured* stove with access to maintenance services
 - Secondary gain of self-sustainability to the community

AMERICAN ACADEMY OF FAMILY PHYSICIANS

© 2018 American Academy of Family Physicians. All rights reserved.

All materials/content herein are protected by copyright and are for the sole, personal use of the user.

No part of the materials/content may be copied, duplicated, distributed or retransmitted in any form or medium without the prior permission of the applicable copyright owner.

AMERICAN ACADEMY OF FAMILY PHYSICIANS

