

Chimneys and Advocacy: Protection from the Negative Effects of Biomass Fuels in Remote Rural Regions with Extreme Poverty

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Abstract

In developing countries, many people in remote rural regions use biomass fuels for cooking, indoor heat during the cold months, heating bathwater, and so on, as they do not have access to alternative fuel sources. The whole family gets exposed to smoke, but women suffer the most because they have the greatest household responsibility. Pregnant women also get exposed, affecting both mothers and their babies. In the villages we served, we wanted to do something about this problem. Given it was beyond our scope to provide alternatives to biomass fuels, we chose to move forward with service-oriented research on the effects of installing chimneys and offering education on protection from the harmful effects of biomass fuels. We found that though advocacy and chimneys helped, not using biomass fuels at all is most effective in minimizing the adverse health outcomes associated with it.

Background

In remote areas in developing countries, communities have limited resources, and biomass fuels are commonly used as there is no affordable alternative available. Everybody in the home is exposed to the ill effects of smoke, from unborn babies to the elderly. Women suffer the most as they are the ones who cook, heat water, and help the family keep warm by burning biomass fuels like logs and cow cakes. Even pregnant women get exposed, which has seemingly endless possibilities for bad health outcomes for both mother and baby both during and after pregnancy.

For example, after being exposed to biomass smoke, pregnant women are at a greater risk for hypertensive disorders. Furthermore, women exposed to fumes from burning biomass fuels and solid fuels have been reported to have a twofold risk of developing hypertensive disorders of pregnancy. And their babies are at higher risk of stillbirths and infant mortality due to fetal thrombosis.¹ Others have reported that indoor air pollution was associated with low birth weight and increased perinatal and infant mortality.²

There could be many reasons for maternal and perinatal illnesses and deaths, but the use of biomass fuels is undoubtedly a contributor—but not much is being done to change things.⁴ In

“The Contribution of District Prioritization on Maternal and Newborn Health Interventions Coverage in Rural India,” Ramesh opined that, when it comes to financial development assistance, the prevention of air pollution was significantly underfunded. He also discussed how no major foundations had made efforts for the control of air pollution their priority, and a lot needs to be done.⁵

Community Services

We began this work by extending community services from the medical institute to the remote rural forestry region in the nearby district where people lived in extreme poverty. This community has extremely low resources and scarce health services. It quickly became apparent that organized maternal and child health services were needed. So, we created a health facility with a system for around-the-clock multispecialty care, emphasizing care for mothers and children. The system for regular services featured a team of doctors in rotation, interns, residents, and specialists from the medical institute, allowing for non-stop care. In addition, nurses, technicians, and helpers were available locally.

It quickly became apparent that medical services were not enough, and it was essential for us to provide community-based services as well. To begin, services were started in 52 villages. Then, depending on funds, resources, and community acceptance, we gradually increased the number of villages we provided services to. Presently we are providing services in 140 villages.

As we spent time in the communities, we found that anemia was prevalent. The apparent cause seemed to be extreme poverty and insufficient intake of micronutrients. However, it was also clear that the smoke from burning biomass fuels lingering inside of huts—with only a single door and no windows—affected everyone living inside. So, we decided to do something about the problematic effects of the smoke.

Given it was beyond our scope to provide alternatives to biomass fuels, we chose to move forward with service-oriented research on the effects of installing chimneys. The Indian Council of Medical Research provided funds.

The cost of chimneys in the market was too high, so we worked with local vendors to procure low-cost chimneys. These chimneys were installed in homes across several villages [Figure 1].

Results and Conclusion

In our initial research, we found that almost 75% of families we included used biomass fuels. Women who used biomass fuels had higher rates of hypertensive disorders of pregnancy and anemia than non-users of biomass fuels. Furthermore, babies whose mothers were exposed to biomass fuels had lower birth weights and were smaller during gestation. Overall perinatal and maternal outcomes were poorer in users of biomass fuels than non-users.

In addition to installing chimneys, we engaged in advocacy work, teaching community members how to protect themselves from the harmful effects of smoke. There were control groups and groups we provided interventions to. So, some villages received the advocacy initiatives while others did not. In some villages, low-cost chimneys were provided in addition to

advocacy, while in others, neither was provided.

After base information was collected, chimneys were installed, and advocacy initiatives were launched, we periodically collected data on all sets of villages. For three years, we collected information on the results for all the included families. We found that advocacy had a positive impact in reducing the adverse effects of biomass fuels. Allowing smoke to exit the home, chimneys made a huge difference. Furthermore, we compared biomass fuel users and non-users and advocacy and non-advocacy and chimney and non-chimney groups. It was revealed that while advocacy and chimneys did make a real difference, the use of biomass fuels, in general, was very harmful.

More research is needed about the effects of biomass fuels on anemia, hypertensive disorders, and low birth weight. All these conditions are killers. Furthermore, when it comes to both the environment and health, smoke is a global issue. So, it is essential to do more work on the subject.

Persisting Challenges

Even low-cost chimneys are not possible for villagers who use biomass fuels in rural communities of developing countries with limited resources, especially communities in remote rural regions like the ones included in our study. Under a government policy, many rural families got gas connections, but they did not have the resources to maintain the services.

Advocacy and chimneys can do a lot, but the use of biomass fuels is still very dangerous. Smoke is a global problem, so all research on the subject is useful for the international community. Much research is needed to learn more about the possibilities for less harmful fuel options for people living in communities with low resources.

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Figure 1



End Notes

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