

THE IMPACT OF INDOOR AIR POLLUTION ON PUBLIC HEALTH

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Intensity of indoor air pollution.

Energy use is associated with the quality of air in the houses in which we live. Socio-economic conditions limit choices of households' energy. The poor are limited to the cheaper fuels for cooking and lighting. However these are low in quality and high on pollution and



other inconveniences. The type of energy used in households greatly affects the health of livelihood of women and young children who spend a good amount of their day in activities related to energy collection

and cooking. Diseases resulting from indoor smoke have effects that impact on the productivity similar to other diseases and disabilities that have been prioritized for intervention.

For more than 80% of Ugandans, biomass in the form of firewood, charcoal, agro wastes and cow dung remain the major source of energy for cooking. Also in the exceptionally cold areas such as Kabale and parts of Kanungu districts, biomass is used for warming

houses. Though kerosene is a cleaner source of energy, number of locally made wick lamps is inefficient, highly polluting and unsafe. Electricity, which is the cleanest form of energy, is inaccessible to 95% of Ugandans. Only 1.2 millions of Ugandans can access electricity and the majority uses it for lighting. The balance of 23 million people has no choice but to use biomass and kerosene for their cooking and lighting respectively. This includes rural areas and slums in urban areas.

Intensity of indoor air pollution.

Biomass use is associated with serious indoor air pollution in form of smoke. Poor combustion of biomass in open fires or poorly functioning stoves, with in poorly ventilated places, produces a lot of smoke leading to high levels of indoor air pollution.

Diseases from indoor air pollution (IAP) form a major health risk to human life in Africa and Asia where biomass is a major source of house-hold energy. Women and children are exposed to this level of pollution on a daily basis.

Most studies on health damaging effects of indoor pollution related to cooking with biomass have identified gases and other substances contained in smoke as major causes of sickness and disease. The particles especially the smaller ones are known to be very health damaging as they penetrate deep into the lungs.

In a recent research, ITDG has found that for kitchens where biomass is used, the annual average levels of pollution are more than ten times the acceptable levels. For purposes of good health, the international daily average may be exceeded only once in 100 days. However, when biomass energy is burnt using poor stoves and under conditions of minimal ventilation, the level of pollution experienced is of a similar gravity to smoking two packets of cigarettes in a day.

It is interesting to note that even with all the traffic and industries in western cities, the annual average levels of similar pollutants rarely exceed international recommendations as opposed to African and Asian kitchens. A research carried out by SPARKNET also confirmed that in a biomass kitchen, levels of carbon monoxide and other pollutants also often exceed the standard guidelines on a daily basis.

Health impacts of indoor Air pollution

Running noses in children and watery eyes in adults are a constant reminder of indoor air pollution in rural house households.

Biomass fires contain health damaging pollutants such as carbon monoxide to which women and children are exposed on a daily basis in the process of cooking.

These pollutants have adverse effects on human health including impairment of mental functions, cardiovascular disease and lung diseases. In addition, the gaseous emissions aggravate respiratory diseases such as asthma, chronic bronchitis and emphysema.

Smoke produced from burning of biomass has been linked to fairly consistent evidence to a range of common and serious diseases both in children and adults. Low birth weight is one of the factors that impact on infant mortality. The poisonous effects of smoke pollution are especially detrimental during pregnancy leading to delivery of low weight babies. In turn, low birth weight ranked by WHO as the world's number one killer has been found to be linked to high levels of indoor pollution.

In Uganda Acute Respiratory Infection is the third most common cause of infant deaths responsible for 8.2% of all recorded death in Uganda. The disease is linked to poor ventilation in the kitchen as one of the commonest and major risk factors where children as young as three weeks are exposed to very high levels of indoor air pollution while they stay with their mothers during the process of cooking.

Though many of the diseases resulting from smoke-pollution are not yet quantified, the most recent information on Global Burden of Disease, published in the 2002 world health report found that IAP is responsible for around 3% of Disability Adjusted Life Years(DALYs) These estimates are based solely on those health impacts for which the evidence is most robust i.e.[Acute Respiratory infection (ARI), Chronic Obstructive Lung Disease (COLD) and lung cancer. The GBD figures may therefore be an understatement of the true situation as other smoke related diseases such as asthma, middle ear infection in children; chronic bronchitis (long term cough and phlegm) tuberculosis, nasal pharyngeal, laryngeal cancer and cataracts are still an issue for research.

How Widespread is IAP in Uganda

Indoor air pollution is wide spread in Uganda as most households use biomass as the primary source of energy. Factors that perpetuate indoor air pollution namely use of poor burners or stoves, poor

kitchen design and inadequate preparation of wood fuel and other biomass fuels prior to use exist in nearly all households.

The traditional three-stone open fire nearly the only way by which biomass is burnt. The use of smoke extraction mechanisms and improved stoves that produce less smoke is still limited to few families despite the fact that these technologies date as far back as the early 1980's. Urban and peri-urban households are no better as they too still rely heavily on wood fuel as the cheapest source of fuel for cooking.

When biomass is poorly burnt using a low quality stove and in a poorly ventilated kitchen the polluting effects of the smoke produced is confined in a small area. This leads to high concentration of fumes, which increases the amount of fumes inhaled. Most kitchens in Uganda lack good ventilation in form of windows, eaves space, chimneys and ventilators. This coupled with the short kitchen structure and very tiny working areas create a much populated indoor environment.

The Need for Intervention against IAP

IAP affects a big and very vulnerable fraction of society namely infant children and expectant mothers. Reducing or complete eradication of indoor air pollution should be a priority of the development agenda. In view of the poor socio-economic circumstances of those affected by IAP, there is need to promote appropriate mechanism that are both effective and cheap. Some research has been done in Uganda for the development of new mechanisms as well as adjustments to existing ones to suit local demand.

The GTZ Energy Advisory Project is currently promoting technologies that are designed to improve efficiency in wood fuel use. On the side of kitchen design, IRDI in collaboration with ITGD- East Africa have been involved in improving kitchens in Nsangi Sub County near Kampala.

It should however be noted that such projects when spearheaded by civil society are short lived and may not bring about the desired behavioral change. IRDI has evidence that energy technologies are not about efficiency and convenience but to a good extent a culture and thus not easily altered. With this in mind the battle against IAP must be embraced by the government and all actors in energy development.

IAP is an issue of public health and not just environment conservation. The ministry of health must play a substantial role in promotion of technologies that reduce indoor air pollution in proportion to efforts but in curbing other life threatening diseases such as measles, Polio, HIV/AIDS and the like.

Policy Recommendation

Public health is directly under the health sector. The ministry of Health (MoH) can play a major role in sensitizing people about the dangers of indoor smoke. Campaign similar to those have been launched against the smoking of tobacco can go a long way in changing the way people regard pollution with in the kitchens. Once people have come to assimilate the intensity of the problems, it will be easy to disseminate technologies that curb indoor air pollution.

Subsidies are granted to services, commodities and activities viewed by governments as crucial to the livelihoods of low income people. Because health services are absolutely necessary for all humanity regardless of socio-economic status, health is one sector for which the government of Uganda still offers subsidies.

However despite the fact that many diseases such as measles, malaria, and now HIV/AIDS have been tackled, the prevention of diseases resulting from IAP has been neglected even if they are several and well known. In addressing IAP, financial and legal instruments such as subsidies and housing standards from ministry of health can reduce the occurrence of several diseases in one go thus making a remarkable contribution to public health.

The subsidies could take the form of services for installing extractors and raw-materials for fabrication of equipment. Research on the health risks of IAP, low- cost improved kitchens together with formulation of other appropriate intervention can contribute tremendously to the improvement of quality life of Ugandans.

Conclusion

Health is one area in development that offers direct benefits to communities. Since Health is a public issue, it should benefit from public funds in line with other sectors such as transport, education, defense, and agriculture. While other factors that impact on health such as water, epidemics and AIDS pandemic have been addressed,

interventions have not been taken by the government of Uganda (particularly the health and energy sectors) to address indoor air pollution.

With efforts of energy sector majorly on developing commercial energy, improvements in use of biomass fuels have been given very little attention which explains the lack of tested interventions with regard to biomass, All in all, there is need to synchronize the energy and health sectors if rural health is to improve sustainably.