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Culture, tradition, and taboo: Understanding the social shaping of fuel choices and cooking practices in Nigeria

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ABSTRACT

Wood fuel remains the most widely used domestic fuel amongst resource poor groups in many low-income countries, despite the environmental and health problems associated with exposure to wood smoke. Studies on household air pollution concentrate predominately on socio-economic and behavioural factors and health with little emphasis on socio-cultural factors. The study contributes to the understanding of household air pollution (HAP) and wood fuel harvesting for domestic activities in low-income countries from a cultural perspective that draws on householders' wood fuel selection and cooking practices in Ado Ekiti, Nigeria. In this paper, we explore how cultural norms influence households' cooking practices, energy choices and perceptions of the causes of ill health and misfortune. The research draws on household surveys, participant observation and semi-structured interviews with householders of four different ethnic origins in nineteen villages. Key findings reveal low levels of awareness of HAP-related illness coupled with high levels of attachment to traditional biomass-fuelled cooking systems for a range of cultural and pragmatic reasons. It is argued that 'ethnic-specific' traditional norms and taboos provide a more important influence on fuel choice, wood fuel harvesting and cooking practices than the lived realities of exposure to household air pollution.

1. Introduction

Around 80 percent of rural households in sub-Saharan Africa rely on biomass fuel for cooking which, when burned on traditional three stone open fireplaces, contributes to high levels of indoor and local air pollution [1]. In many countries, it is not only rural people that live close to forest lands that subsist on biomass fuels. Resource poor households in urban, peri-urban and non-forested rural areas frequently also make use of biomass fuel (wood, charcoal, agricultural wastes, sawdust, wood chip, and animal dung) for cooking, lighting and heating [2,3]. The near-universal use of traditional three stone fires further worsens air quality levels in dwellings, causing it to exceed World Health Organisation (WHO) guidelines. The incomplete combustion of biomass fuels releases high quantities of harmful pollutants into the atmosphere which cause an estimated 600,000 deaths per year in Africa [4]. It can also have negative health impacts on biomass users and their neighbours including chronic obstructive pulmonary disease, acute respiratory infections, low birth weight, high blood pressure, infant mortality and pneumonia [5–13]. Women and children are generally assumed to be most vulnerable to the impacts of household air pollution

[11–17] due to their greater exposure to biomass smoke during cooking. In addition to these health-related effects, the burning of biomass fuel has been linked to deforestation and, more recently, to climate change resulting from carbon emissions [18].

Efforts to ameliorate these problems brought forth a range of different initiatives including schemes promoting the adoption of improved cookstoves. These initially tended to focus on fuel-efficient stoves to help address perceived fuel wood demand-supply gaps associated with the 'other energy crisis' [19]. Later initiatives focused more on the development of 'clean' stoves that reduce emissions of carbon monoxide, hydrocarbons, particulate matter and black carbon; all of which have been linked to high levels of household, community and global air pollution [20–22]. An important assumption shared by both sets of initiatives is that with time and rising socio-economic status, households will move up the 'energy ladder' from biomass fuels to cleaner and more efficient fuels for domestic activities [11,23–26]. Nevertheless, it is widely recognised that households frequently 'stack' (use a range of) different fuels according to considerations like fuel prices, the food being cooked or seasonal influences on fuel availability or cooking practices [27–29]. Socio-economic factors including income,

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family size, gender, age, occupation, education are recognised as particularly important influences on energy choices [30–32] although the role of user priorities and supportive government policies is also acknowledged [33].

In an effort to combat HAP and bring about changes in the living conditions of resource poor populations that subsist on biomass fuels, the Global Alliance for Clean Cookstoves (GACC) is planning to deliver clean cookstoves and fuels to 100 million households by 2020 [34]. Particular emphasis has been placed on improving the adoption and diffusion rates of improved cookstoves (ICS) and non-solid fuels as a means of preventing local environmental problems associated with HAP from shifting to community and global levels [11,35–40]. While some significant declines in the proportion of households relying on solid fuels have occurred in Southeast Asia and the Western Pacific, less progress has been made in Africa with two thirds of the population relying primarily on solid fuels in many countries [2,41]. Elsewhere, the uptake of clean fuels and ICS has often been slow amongst resource poor populations [42] with key barriers including the expense of clean stoves and alternative fuels and the failure of ICS and non-biomass fuels to meet user priorities [18,43].

In Nigeria, ICS interventions have included the promotion of more efficient and cleaner burning wood stoves (e.g. 'Save 80' and rocket stoves), solar cookers, LPG and ethanol stoves [44–47]. In practice, however, the dissemination of information on the efficiency and health benefits of ICS compared to 'traditional stoves' and the health impacts of HAP has often failed to translate into increased uptake [48,49]. This has been linked to concern about the cost and availability of alternative fuels including gas, kerosene, ethanol and electricity [44]. Also significant has been the failure of many ICS designs to meet locally-specific cultural cooking preferences relating to taste, fuelling practices, cooking location, stove size and flexibility to accommodate heating as well as cooking needs [45–47].

Recognising the failure of past programs to promote widespread uptake of ICS, Ezzati and Kammen [50] highlight the need for an interdisciplinary approach to understand which cookstove interventions will be effective in ameliorating HAP problems. This reflects the fact that traditional 'hardware-oriented' approaches (the promotion of pollution-reducing products and efficient technology to solve HAP problems) often failed to appreciate the value placed on traditional cooking methods and increased awareness of HAP-related health impacts is rarely sufficient to increase demand [18]. In response, increasing emphasis has been placed on the need for ICS interventions to combine hardware and 'software' approaches that place greater priority on considering and incorporating the social and cultural contexts of HAP interventions [43,51]. In particular, software perspectives have helped to highlight the importance of local cooking practices (food locally cooked, utensils used, number of meals per day, family size) and more practical user priorities (affordability, ease of maintenance, use of ash combustion by-products for health and agricultural functions) that help to sustain the use of traditional stoves and biomass fuels [18,25,52–55].

To understand energy choices, it is necessary not only to consider the technical, economic, social and political context, but also to consider locally-specific cultural influences [4]. The frequently localised nature of domestic wood fuel use means that it is often linked to cultural heritage [55] with local wood harvesting practices reflecting and influencing ethnically and culturally-specific norms and preferences regarding food preparation [56]. Some of these knowledges reflect more pragmatic factors related to the uses and functions of different types of wood fuel, although others are linked more closely to taboos associated with the use of particular species [56]. As noted by Houehanou et al. [57] intercultural and intracultural differences along with ethnicity can affect the choice and use of a particular plant on the basis of factors like familiarity, local abundance, combustion properties and suitability for multi-purpose uses such as drying and fermentation [58].

Although the influence of socio-economic factors on energy preferences is well studied [31,32] less is known about locally-specific

cultural preferences for particular biomass fuels and understandings of ill health linked to inappropriate fuel wood use. Likewise, while cultural analysis has been undertaken to examine energy-related behavioural change linked to fire tending and proximity to fireplaces [39,43,51], the ways in which illness and misfortune are linked to the contravention of cooking norms (and the ownership of household assets more broadly) is poorly understood. At the same time, work on the role of local ecological knowledge in identifying natural resources for multipurpose uses [56,57,59] reveals little about locally-specific cultural influences on wood fuel choices.

In this paper, we use data from Ado Ekiti, Nigeria to explore how cultural norms influence households' cooking practices, energy choices and perceptions of the causes of ill health and misfortune. Section 3.1 focuses on ethnic-specific norms and taboos regarding the use of specific tree species for biomass cooking and how their contravention is associated with debilitating health outcomes. Community-wide cultural norms and taboos associated with cooking practices are also discussed in this section with attention being drawn to how ill health and misfortune are associated with a failure to observe these. Emphasis is also placed on respondents' low levels of awareness of HAP-related ill health and the value they place on traditional biomass-fuelled cooking systems for a range of cultural and practical reasons. Continuing this theme, section 3.2 explores local perceptions of smoke, highlighting how it is valued for both utilitarian and cultural reasons but is not widely associated with serious health problems. Drawing on these findings, we argue, in sections four and five, that uptake and sustained use of either ICS or modern energy sources amongst resource-poor households is unlikely to be achieved without closer attention to local differences in cultural norms and preferences surrounding cooking and fuel use. As a result, local user preferences and lived realities need greater prioritisation in initiatives seeking to promote the adoption of ICS and cleaner fuels.

The paper's originality and rigor lies in its use of in-depth qualitative research to understand and give voice to culturally-specific practices, priorities and norms surrounding cooking and wood fuel collection. Of particular significance are findings that highlight the range of benefits provided by traditional stove and woodfuel combinations (*aro meta*) in low-income contexts that cannot easily be replicated by ICS. The clear associations that respondents made between ill health, misfortune and the contravention of cooking-and fuel-related norms/taboos are also relevant for ICS and health intervention programs. These findings are likely to be of particular relevance to practitioners and researchers working in the ICS and energy sectors with responsibility for designing interventions seeking to promote respiratory health and reduce greenhouse gas emissions.

2. Methods and materials

2.1. Description of the study area

This study was carried out amongst low income migrants in periurban settlements of Ado Ekiti, Nigeria (Fig. 1) which comprise of a mix of farms, villages and forested environments. Ado Ekiti is situated at latitude 7° 40′ North and longitude 5° 16′ East with a land area of 265 km² and an elevation of 400 m above sea level [60,61]. The main periods of fieldwork took place between October 2009 and September 2014 with additional information obtained in 2016. The choice of location was based on the fact that the study area's Yoruba cultural and administrative traditions have been influenced over time by in-migration of other ethnic groups including Ebira from central Nigeria, Tivs from the middle-belt region and Hausa from northern Nigeria.

Our survey of 350 households from nineteen peri-urban communities reflects this mixture with 76 percent comprising of Ebira households, 16 percent Yoruba, 7 percent Tiv and 1 percent Hausa. Although these communities are mostly situated in close proximity (distances range from 0.5 to 20 kilometres) to Ado Ekiti, they have not yet