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Socioeconomic and medicinal dimensions of indigenous knowledge and livelihood resilience on selected native tree species in northern Ghana

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Abstract

Indigenous knowledge (IK) systems underpin multifunctional agroecosystems that sustain livelihoods, enhance climate adaptation, and support primary healthcare in the savannah landscapes of Northern Ghana. This study uses a mixed-method design to evaluate the socioeconomic and ethnomedicinal services of six native tree species of priority (*Adansonia digitata*, *Parkia biglobosa*, *Lannea acida*, *Sclerocarya birrea*, *Bombax costatum* and *Ziziphus mauritiana*) in 15 communities. Structured questionnaires, focus group discussions and participatory ranking were used to collect data with 198 respondents, and this was analysed using Relative Importance Index (RII), Spearman rank correlation, Chi-square tests and thematic coding. Findings indicate that more than 90 % of households rely on native tree species to obtain food, income and healthcare, and *Parkia biglobosa* and *Adansonia digitata* have been found to be key species because of their multi-purpose nature and high market value. Ethnomedicinal use was noted in 85 % of the respondents and was mostly applied to gastrointestinal, respiratory, musculoskeletal and dermatological conditions. The most used plant parts were the bark (41.4 %) and leaves (37.9 %) with most of the preparation being done by decoction. Statistically, there were significant positive correlations between the perceived medicinal efficacy and species availability ($\rho = 0.588$, $p = 0.001$), and the trade importance ($\rho = 0.660$, $p = 0.001$), and medicinal value was strongly correlated with utilisation pressure ($\rho = 0.560$, $p = 0.001$), which indicated a clear livelihood–conservation trade-off. Although IK is widespread, there is still a lack of sustainable management practices, and overharvesting and poor regeneration of high-value species are the most common perception. A main policy implication is to prioritise native tree species incorporation in national climate adaptation and agroforestry policies via community-based domestication and controlled harvesting systems which allow conservation and livelihood gains to be sustained. This is essential in the development of climate resilient, multifunctional agroecosystems in especially drylands of West Africa.

Keywords: Agroforestry, climate adaptation, ethnomedicine, food security, indigenous knowledge (IK), livelihood resilience, savannah ecosystems

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