

Publication

Symptoms and functional limitations related to respiratory health and carbon monoxide poisoning in Tanzania: a cross sectional study

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4651939

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BACKGROUND: The burden of chronic respiratory symptoms and respiratory functional limitations is underestimated in Africa. Few data are available on carbon monoxide (CO) poisoning in sub-Saharan Africa and existing data is derived from CO in ambient air, but not from biomarkers in the blood. **METHODS:** Data from the Tanzanian Lung Health study, a cross-sectional study on lung health among outpatients and visitors to an urban as well as a rural hospital in Tanzania, was analyzed to describe respiratory symptoms and functional limitations. Saturation of peripheral blood with carbon monoxide (SpCO) was measured transcutaneously and non-invasively in participants using a modified pulse oxymeter indicative of CO poisoning. Univariate and multivariate analysis was performed. **RESULTS:** Nine hundred and ninety-seven participants were included in the analysis, the median age of participants was 46 years (49% male). 38% of participants reported some degree of chronic shortness of breath and 26% felt limited in their daily activities or at work by this symptom. The median SpCO was 7% (IQR 4-13, range 2-31%) among all participants without active smoking status (N = 808). Participants cooking with gas or electricity had the lowest SpCO (median 5%), followed by participants cooking with charcoal (median 7%). Cooking with wood, particularly using a stove, resulted in highest SpCO (median 11.5%). Participants from households where cooking takes place in a separate room had the lowest SpCO as compared to cooking outside or cooking in a shared room inside (6% vs. 9% vs. 10.5%, $p < 0.01$). Sex or the activity of cooking itself was not associated with a difference in SpCO. Multivariate analysis confirmed cooking in a separate room (as compared to cooking outside) and living in a rural vs. urban setting as protective factors against high SpCO. **CONCLUSION:** The findings demonstrate a high burden of chronic respiratory symptoms which also cause socioeconomic impact. High levels of SpCO indicate a relevant burden of carbon monoxide poisoning in the local population. The level of CO in the blood is more dependent on shared exposure to sources of CO with the type of housing and type of cooking fuel as most relevant factors, and less on person-individual risk factors or activities.

ISSN/ISBN 1476-069X (Electronic)1476-069X (Linking)**URL** <https://doi.org/10.1186/s12940-022-00847-x>

edoc-URL <https://edoc.unibas.ch/91030/>

Full Text on edoc Available;

Digital Object Identifier DOI 10.1186/s12940-022-00847-x

PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/35365149>

ISI-Number WOS:000777168500001

Document type (ISI) Journal Article