Perspective

Urban Development in Sub-Saharan Africa: Bearer of Goods and Risks

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Sub-Saharan Africa remains the least urbanized region of the world and more than 60% of the population, 570 million people, still live in rural areas [1]. Over the next few decades Africa will be one of the most rapidly urbanizing regions [2], and with this transition is an expected rise in cardiovascular risk factors and disease (CVD) [3]. Across sub-Saharan Africa, many adults migrate back and forth from rural home communities to more urban areas for work and education; others have moved to urban areas; and in still other cases, rural communities themselves have urbanized. In this issue of PLOS Medicine, a study by Riha and colleagues is directly concerned with the latter scenario within the context of urbanizing rural Uganda [4]. As the authors aptly note, the crude dichotomy of urban-rural difference obscures the changes occurring within rural regions themselves, as characteristics of urban environments, defined as urbanicity [5], become more prominent. Urbanization is a complex worldwide phenomenon and challenges global populations to recalibrate a set of far reaching behaviors as the meaning of communities change, networks widen, and globalization influences attitudes and access to new resources. Some of these phenomena are likely to be health promoting, while others expose formerly rural populations to new risks.

Riha and colleagues’ study is the first in Sub-Saharan Africa, to our knowledge, to examine how urbanicity relates to the development of CVD risk factors in rural regions [4]. It is an important and revealing study. The population was drawn from 25 Ugandan villages that were unambiguously rural by conventional standards. A previously developed multi-country urbanicity scale was applied to score each village on seven domains meant to capture the hallmarks of urbanization: increasing population size and density, declining role of agriculture as the principal source of employment, rising education and diversity in educational achievement, increasing access to electricity and modern sanitation, and the presence of communication infrastructure [5,6].

Compared to villages in the lowest quartile of urbanicity (most rural), individuals living in villages in the highest quartile (least rural) had a 50% increase in overweight, more than a 3-fold increase in heavy drinking, and were about 20% more likely to have low physical activity levels or a diet low in fruits in vegetables. This association showed minimal attenuation despite adjustment for individual level socioeconomic status (SES) quantified through a household asset and wealth index. There was no difference in smoking prevalence or hypertension. Given the great variability among countries in sub-Saharan Africa, it is unclear how generalizable these results are beyond Uganda.

Urban-Rural Dichotomies: Too Simplistic to be Meaningful?

These results suggest a much more complex story than what is typically captured through well-trodden urban-rural classifications. The current dominant urban-rural dichotomy can be traced to at least the 1940s when the United Nations began reporting population statistics using this classification scheme [7], and is perhaps a legacy of a time when differences between urban and rural areas were much more discrete. However, the current application of these definitions varies widely. In a review of United Nations data on 228 countries about 50% used a strictly administrative criterion for urban

Linked Research Article

This Perspective discusses the following new study published in PLOS Medicine:


Johanna Riha and colleagues evaluate the association of lifestyle risk factors with elements of urbanicity, such as having a public telephone, a primary school, or a hospital, among individuals living in rural settings in Uganda.


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Abbreviations: CVD, cardiovascular disease; SES, socioeconomic status; LMICs, low- and middle-income countries

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Environments

Socioeconomic Status on
Disentangling the Impact of
of size and density characteristics, 39 used
urban), 51 countries used a combination
(e.g., the capital city is by definition
ability of effects both within and between
on health, and potentially greater compa-
power to detect the impact of urbanicity
elements of urbanicity, increased statistical
changes within communities over time in
non-linear effects on health, detecting
a full range of characteristics, detection of
nuanced classification of communities on
numerous: a much more precise and
the urban environment correlate with
health outcomes, and perhaps gain a
causal understanding of how this occurs.
The principle advantages of these scales
over basic urban-rural classifications are
numerous: a much more precise and
nuanced classification of communities on
a full range of characteristics, detection of
non-linear effects on health, detecting
changes within communities over time in
elements of urbanicity, increased statistical
power to detect the impact of urbanicity
on health, and potentially greater compa-
rability of effects both within and between
countries [6,7].

Disentangling the Impact of Socioeconomic Status on Health in Urbanizing Environments

Some hallmarks of rising urbanicity
in low- and middle-income countries (LMICs) are increasing educational attain-
ment and wealth, and transition in prima-
ry occupation away from agriculture.
These aggregate village level metrics have
entered the scoring system of urbanicity
scales, including the scale applied in the
paper by Riha and colleagues [6,8].

Occupation, educational attainment, in-
come, and wealth are fundamental mea-
sures of SES, and how to model their
effect on health while simultaneously
considering them as markers of an urban-
izing environment is conceptually com-
plex, especially given individual measures
of SES can largely explain urban-rural
differences in health for some measures
[9]. A further challenge is how to capture
income and wealth in LMICs, often
leading to use of an asset index as a proxy
for wealth [9]. To disentangle these effects,
Riha and colleagues kept aggregate educa-
tion and occupation within the urbani-
city scale, but removed measures of
household wealth and quality, and instead
used an asset-based measure of wealth as
the individual level SES measure. Essent-
ially, they considered aggregate education
and occupation solely at the village level
and wealth as the only individual level
measure of SES. Given the complexity
and interplay of these factors, an analysis
modeling occupation, education, and
wealth at both the individual and aggre-
gate village level would allow examination
of their relative impact. Such a multilevel
approach would permit us to examine
whether context adds to our understand-
ing of health dynamics, net of individual
characteristics.

Positive and Negative Health Consequences of Urbanization

The study of urbanization as a risk
factor for non-communicable disease fol-
ows the “urban health penalty” paradigm
[10], the idea that urban environments
convey risk and are associated with greater
rates of many diseases. But urban envi-
ronments can also be the source of much
that benefits human wellbeing [11]. It is
unlikely that access to health centers,
schools, and improved sanitation them-
selves lead to poor health. Rather it seems
most logical that unmeasured conditions
associated with these indicators lead to
increased cardiovascular risk. The authors
have limited insight into these factors,
which are perhaps related to changes in
diet, easier opportunities to purchase
alcohol, and less physically demanding
occupations. What distinguishes features
of urbanicity that have positive and
negative impacts on wellbeing is far from
clear. Although the stated objective of the
study by Riha is to identify “potential
avenues for intervention” in the urbaniza-
tion process to help prevent CVD, there
are few obvious targets for public health
intervention.

Critically, the focus on emergence of
CVD with urbanicity should not take
away from the broader needs of the
population being studied. For example,
90% to 85% of this rural population still
have body weights in the normal to
underweight range, and across all of rural
Uganda prevalence of underweight ex-
ceeds overweight [9]. Even though a
detectable gradient exists between ele-
ments of urbanicity and CVD risk factors,
one should not interpret this as implying
that population needs have now shifted
towards CVD prevention. Urban develop-
ment and increases in social resources
related to education, disease prevention,
and better opportunities for work hold
important promises for LMICs still con-
fronting the costs of poverty and lack of
health protection infrastructure. A broader
analysis of all sources of disease burden
in this population is required to set disease
prevention priorities [12].

Author Contributions

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References

data.worldbank.org/region/sub-saharan-africa.
Accessed 1 January 2014.
2. United Nations Department of Economic and Social
Affairs (2012) World Urbanization Prospects The
rural-to-urban within-country migration on car-
diovascular risk factors in low- and middle-
income countries: a systematic review. Heart 98:
1185–1194.
5. Vlahov D, Galea S (2002) Urbanization, urbani-
(2012) The development and validation of an
urbanicity scale in a multi-country study. BMC
Public Health 12: 320.
environment: a scale measure of urbanicity
outperforms the urban-rural dichotomy. Soc Sci
ing community context and adult health changes
in China: development of an urbanicity scale. Soc
9. Neuman M, Kawachi I, Gortmaker S, Subrama-
ian SV (2013) Urban-rural differences in BMI in
low- and middle-income countries: the role of
socioeconomic status. Am J Clin Nutr 97: 428–
436.
10. Andrulis DP (2002) The urban health penalty:
new dimensions and directions in inner-city
and health in a world of increasing globalization: issues for developing countries. Bull World Health
Organ 78: 1117–1126.
assessing the importance of non-communicable
diseases for the poor. Int J Epidemiol 42: 1211–
1214.