



# Vulnerability to the COVID-19 Pandemic and Mitigation Measures among People Living with HIV in Peri-Urban Tanzania

Nilupa S. Gunaratna<sup>1</sup>, Japhet Killewo<sup>2</sup>, Dominic Mosh<sup>3</sup>, Ramya Ambikapathi<sup>1</sup>, Morgan Boncyk<sup>1</sup>, Aloisia Shemdoe<sup>3</sup>, Ally Mangara<sup>2</sup>, Patrick Kazonda<sup>2</sup>, Isaac Lyatuu<sup>3</sup>, Savannah Froese<sup>1</sup>, Cristiana Edwards<sup>1</sup>, Crystal Patil<sup>4</sup>, Mary Mwanyika-Sando<sup>3</sup>, Germana Leyna<sup>5</sup>

<sup>1</sup> Purdue University, USA; <sup>2</sup> Muhimbili University of Health and Allied Sciences, Tanzania; <sup>3</sup> Africa Academy for Public Health, Tanzania; <sup>4</sup> University of Illinois at Chicago, USA; <sup>5</sup> Tanzania Food and Nutrition Centre, Tanzania



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Contact:  
gunaratna@purdue.edu

The COVID-19 pandemic and resulting mitigation measures are negatively impacting the physical and mental health, livelihoods, incomes, and food security of people across the world. Populations in low- and middle-income countries are particularly vulnerable, especially when concurrently dealing with co-morbidities such as non-communicable diseases and the human immunodeficiency virus (HIV).

**Objective:** To characterize the vulnerability to COVID-19 of people living with HIV (PLHIV) and their families in peri-urban Dar es Salaam, Tanzania

This study is embedded within the Diet, Environment, and Choices of Positive Living (DECIDE) Study, a mixed methods study of PLHIV and their families in peri-urban Dar es Salaam that evaluates food environment influences on dietary choices:

- Two rounds of quantitative surveys of PLHIV (n=321) and family members (n=214), Feb-June 2019 and Nov 2019-Feb 2020
- Qualitative interviews with PLHIV (n=20) and family members (n=20)
- Food environment mapping of all food vendors (n=6627) in the study area



Vulnerabilities	DECIDE Population	Implications
Physical Health	<ul style="list-style-type: none"> <li>The majority have been living with HIV for several years (median time since diagnosis: 4 years, Q1-Q3: 2-8 years)</li> <li>Adherence: 92% self-report good adherence to anti-retroviral treatment</li> <li>30% of households have at least one member with another chronic disease: hypertension – 25%, diabetes – 7%, heart disease – 4%, cancer – 2%</li> <li>36% of PLHIV are overweight or obese</li> <li>3% of PLHIV are 65+ years old</li> <li>15% of PLHIV report hospital admission in the last 12 months</li> </ul>	<ul style="list-style-type: none"> <li>So far, little is known about the risks of COVID-19 in PLHIV. Risks are greater among the elderly, those with other medical conditions, and the immunocompromised (CDC 2020)</li> <li>This population needs ongoing access to health care. Any changes in available health services can negatively impact management of HIV (diagnosis, treatment) and other chronic diseases</li> <li>Age and chronic disease co-morbidities increase risk of adverse outcomes from COVID-19</li> </ul>
Mental Health	<ul style="list-style-type: none"> <li>48% of PLHIV report symptoms indicating depression</li> <li>27% of caregivers report symptoms indicating depression</li> </ul>	<ul style="list-style-type: none"> <li>There are unmet mental health needs among PLHIV and their caregivers</li> <li>These may be exacerbated as stress increases from consequences of the pandemic</li> </ul>
Ability to Social Distance	<ul style="list-style-type: none"> <li>6 members/household on average (Leyna et al. 2017)</li> <li>53% share toilet with one or more households</li> </ul>	<ul style="list-style-type: none"> <li>Density of living conditions and shared sanitation facilities increase risk of exposure and difficulty to isolate when showing COVID-19 symptoms</li> </ul>
Employment and Income	<ul style="list-style-type: none"> <li>71% male PLHIV and 57% female PLHIV work outside the home</li> <li>Most work in non-salaried positions (day workers, petty trade)</li> <li>33% rent their place of residence</li> </ul>	<ul style="list-style-type: none"> <li>High interpersonal contact through work and public transportation increases risk of exposure</li> <li>Livelihoods, incomes, and housing security are vulnerable to economic downturns</li> </ul>
Water Security	<ul style="list-style-type: none"> <li>20% had difficulty affording water</li> <li>11% had inconsistent water access</li> </ul>	<ul style="list-style-type: none"> <li>Water insecurity limits handwashing per WHO recommendations to reduce transmission</li> </ul>

Vulnerabilities	DECIDE Population	Implications
Food Environment	<ul style="list-style-type: none"> <li>• Food vendors: 39% formal, 44% semi-formal, 17% informal</li> <li>• Produce and animal source foods are largely purchased through semi-formal and informal vendors</li> </ul>	<ul style="list-style-type: none"> <li>• Semi- and informal food vendors are a key source of nutritious foods but are more susceptible to disruptions in food supply chains and pandemic mitigation measures</li> </ul>
Food and Nutrition Security	<ul style="list-style-type: none"> <li>• 72% report food insecurity</li> <li>• Both food price increases and uncertainty in prices affect purchasing behavior</li> <li>• PLHIV and caregivers alter food acquisition and allocation as HIV progresses</li> <li>• 34% have access to a refrigerator</li> <li>• 10% PLHIV are underweight</li> </ul>	<ul style="list-style-type: none"> <li>• People must interact to acquire, process, and store food, increasing risk of exposure</li> <li>• Food insecurity will increase with price increases and fluctuations due to the pandemic</li> <li>• PLHIV have increased dietary needs due to HIV and other morbidities</li> </ul>

**Opportunities:**

- Regular clinic attendance provides opportunities within the health system to educate PLHIV and their families on COVID-19
- High literacy (79%) and access to multiple sources of information (cell phone 95%, radio 41%, television 42%, social media use 46%) enable promotion of COVID-19 prevention and management behaviors

**Conclusions:** PLHIV and their families are particularly vulnerable to COVID-19 and the consequences of the pandemic response. Prior to the pandemic, families living with HIV in peri-urban Tanzania reported high reliance on the informal economy for livelihoods and nutritious foods; food, nutrition, and water insecurity; and a high burden of non-communicable diseases and depressive symptoms. In addition to the risk of infection, consequences of the pandemic and mitigation measures can worsen these outcomes. In the long term, interruptions or reduced utilization of health services, including diagnosis and treatment of HIV and non-communicable diseases, could also worsen health outcomes.

**Questions? Contact: Nilupa Gunaratna, Purdue University, [gunaratna@purdue.edu](mailto:gunaratna@purdue.edu)**  
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