

Maternal mortality in urban and rural Tanzania

Social determinants and health system efficiency



In brief

- Maternal mortality rates (MMRs) in Tanzania have remained stubbornly high over the last decade, at around 500 per 100,000 live births.
- Previous research indicates unequal burden of MMRs and large variations across regions.
- This brief uses the 2015/16 Tanzania Demographic Health Survey (TDHS) and 2012 National Census to provide an overview of MMRs.
- The brief also analyses the supply of maternal health services across stages of pregnancy (from seeking care to delivery) to understand where bottlenecks and delays emerge and their causes.
- The authors find multiple factors behind the regional variances in service delivery, including the quality of service and other factors such as marital status during pregnancy.
- The authors outline four recommendations for policymakers and suggest that reducing the delays in mothers receiving treatment is key to reducing MMRs.

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Research overview

Maternal mortality is defined by the timing of female deaths in relationship to the pregnancy, as ‘any death occurring during pregnancy, childbirth or within two months after birth or pregnancy termination’¹. Maternal mortality in Tanzania has risen over recent years² and is now increasingly urban^{3,4}. These results have raised concerns from the Government of Tanzania and stakeholders about the reasons for such inconsistencies.

Funding challenges remain, therefore resulting in a heavy reliance on external financing, and the national budget allocation of 10% to the health sector remains below the 15% Abuja Declaration target despite it being recognised as a key pillar for national development. While Tanzania has developed the ‘One Plan’ to merge reproductive, maternal, neonatal, and child health policy, the One Plan does not have a fully costed implementation plan⁵. To date, key interventions in Tanzania for maternal health care have focused on the following five areas: the Modern Contraceptive Prevalence Rate (MCPR); provision of Antenatal Care (ANC4+) services four or more times; Skilled Birth Attendants (SBA); Health Facility Delivery; and availability of Basic Emergency Obstetric Care (BEmOC) and Comprehensive Emergency Obstetric Care (CEmOC).

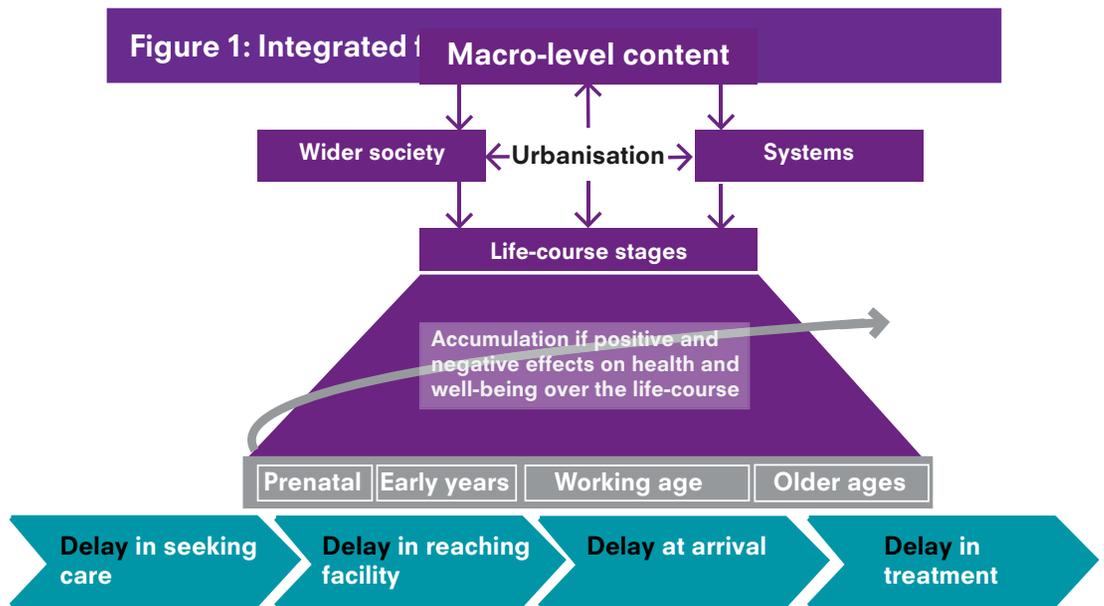
The health system is failing to meet the needs of women, but the questions are why, how, and when. This study focuses on comparing outcomes in urban and rural areas, and women who have previously delivered babies or been pregnant.

The study uses the Tanzania Demographic Health Survey (TDHS) 2015/16 and National Census 2012 to provide an overview of Maternal Mortality Rates (MMRs) at a regional level. However, due to data limitations, the study has supplemented analysis with the Verbal Autopsy (VA) and the Sample Vital Registration with Verbal Autopsy (SAVVY), a system for monitoring and reporting vital events that also provides causes of death information⁶; Health Service Delivery Indicators (SDI) data (SDI, 2014); and the Tanzania Service Provision Assessment (TSPA) (2010 and 2015).

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1. Tanzania National Bureau of Statistics, “Tanzania Demographic and Health Survey and Malaria Indicator Survey,” 2015.
 2. Tanzania National Bureau of Statistics, “Tanzania Population and Housing Census,” Dar-es-Salaam, 2013.
 3. M. Thomas, S. Donkin, A. Bell, R. Todd, G. Levira, F. Geubbels, E. Mamdani, “Creating healthy cities in Tanzania: using the SDoH framework to understand how urbanisation impacts on human development in Tanzanian cities,” no. November, 2016.
 4. G. Levira, F. & Todd, “Urban Health in Tanzania: Questioning the Urban Advantage,” *J. Urban Heal.*, vol. 94, no. 3, pp. 437–449, 2017.
 5. H. Afnan-Holmes *et al.*, “Tanzania’s Countdown to 2015: An analysis of two decades of progress and gaps for reproductive, maternal, newborn, and child health, to inform priorities for post-2015,” *Lancet Glob. Heal.*, vol. 3, no. 7, pp. e396–e409, 2015.
 6. CDC, Ifakara Health Institute, Tanzania National Bureau of Statistics (NBS), and National Institute for Medical Research (NIMR), “Sample Vital Registration with Verbal Autopsy – SAVVY,” 2015.

In doing so, the datasets were analysed using an integrated framework recognising the ‘Continuum of Care’ and the ‘Social Determinants of Health’⁷ to understand the complex factors inter-related with the demand for and supply of maternal health services, and profiles of women at higher risk (Figure 1).

Secondly, focusing on the supply of maternal health services across stages of pregnancy (from seeking care to delivery), the study looks at where bottlenecks and delays emerge, and their causes. By conceptualising risk, inputs, and outcomes within this framework, guidance is provided to policymakers on where impact can be best achieved in rural and urban settings.



7. S. Daly, “Healthy High Streets Good place-making in an urban setting,” 2018.

Research motivation and findings

| Research question | Summary of key findings |
|---|---|
| <p>What is the pattern of MMR in terms of rural-urban divide and what are the risks along the health care chain?</p> | <p>At a regional level, being an urban resident and/or living in an area with a low health system strength score was statistically associated with MMR.</p> <p>Implementation of the Health Systems Strengthening Strategy (HSSS) varied regionally, and showed inputs (i.e., facility density, inpatient beds density, and health infrastructure) are not yet having the desired effects on outputs (i.e., inpatient service utilisation and outpatient visits per capita).</p> |
| <p>Which women are more at risk of maternal mortality and what factors explain this? What is the context behind the high and prevalent MMR found in Tanzania?</p> | <p>Individual MMR risk factors include: being married or with a partner, age, and place of death. There is an 85% increased risk of maternal death if the woman is married and/or living with a partner; and 80% increased risk if the woman is between 20-24 years old, the peak reproductive age and thus the age group exposed to higher risk.</p> <p>Surprisingly, the results show that residence, mother's education, poverty, and the Health Systems Strength index are not significantly correlated with MMR risk.</p> |
| <p>What aspects of service provision explain variations in maternal mortality?</p> | <p>Service quality varies in urban vs rural areas, but there is a decreasing urban-rural gap. Demand for family planning methods has increased from 58.2% to 56.5% in recent years, while post-natal care for mothers shows a decreasing trend at both the national and rural-urban level.</p> <p>In general, all indicators are higher in urban areas than in rural areas: i.e., (i) having skilled birth attendants, although this varies by education and wealth, (ii) overall diagnostic accuracy and availability of key infrastructure, and (iii) antenatal care (ANC) services being more 'prepared' to receive patients, i.e., having more opening days, soap, and medicine.</p> <p>However, health worker absence and patient caseload is higher in urban areas, and urban facilities are congested.</p> |

| Research question | Summary of key findings |
|--|---|
| <p>Where in the maternal health care chain is the health system failing to reach vulnerable women?</p> | <p>The study shows two key delays: delays in seeking care and delays at treatment.</p> <p>Delays are differentiated based on urban and rural geographies. In the case of rural locations, the most significant delays are shown in seeking care and reaching the facility. The demand for services, visits to ANC services, and whether a mother delivers in a health facility or is provided care services upon delivery are lower in rural areas (although rising, these remain lower in comparison to urban areas). Despite rural areas having an advantage of having at least one ANC staff having received ANC training, the ANC services were not open as frequently as in urban areas and the utilisation of services was lower.</p> <p>For urban areas, delays are at arrival and in treatment. Access to services is higher as explained, and although quality indicators suggest an improvement compared to rural counterparts, facilities are receiving higher caseloads, have higher health worker absences, have more complicated cases, and have sub-par diagnostics. The caseload in urban areas is one-third higher than in rural areas, as per the SDI (2014).</p> |

In exploring the delay in seeking care, an interesting observation is made in the case of marital status. Results show increased risk of maternal death if the woman is married or living with a partner compared to when the woman is single. This raises questions over who influences the decision-making process for a woman to deliver in a certain health facility: herself or her male partner? Additionally, the timing for which these decisions are made⁸⁹¹⁰ is important as delays can be life threatening. The decision-making process of couples is, therefore, a key factor that needs to be explored through further research. Gender dynamics in urban and rural

8. T. Tancred, T. Marchant, C. Hanson, J. Schellenberg, and F. Manzi, "Birth preparedness and place of birth in Tandahimba district, Tanzania: What women prepare for birth, where they go to deliver, and why," *BMC Pregnancy Childbirth*, vol. 16, no. 1, pp. 1–9, 2016.

9. E. Danforth, P. Kruk, G. Mbaruku, and S. Galea, "Household Decision – making about Delivery in Health Facilities: Evidence from Tanzania.," *J. Heal. Popul. Nutr.*, vol. 27, no. 5, pp. 696–703, 2009.

10. M. Mrisho *et al.*, "Factors affecting home delivery in rural Tanzania," *Trop. Med. Int. Heal.*, vol. 12, no. 7, pp. 862–872, 2007.

areas and family power dynamics need to be further explored for effective targeting by policymakers. Male partners also need to be considered in future dissemination strategies for maternal health practices.

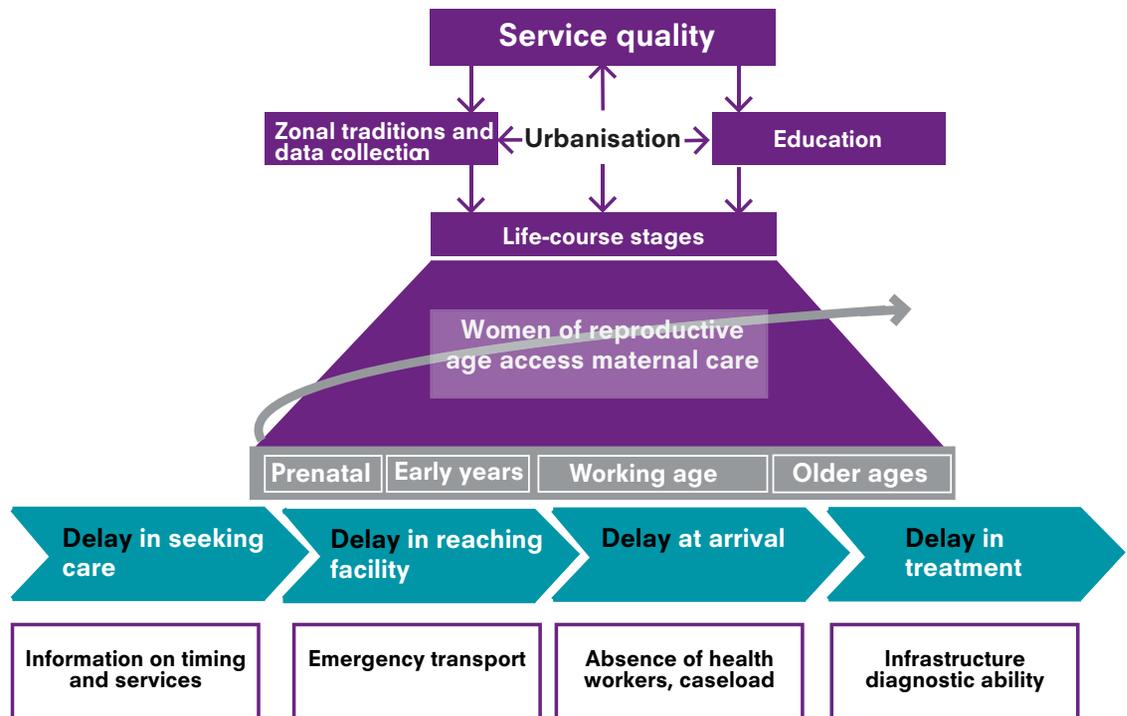
Policy recommendations

Based on the results highlighted above, this report raises the following recommendations:

- 1. The HSSS outputs need to be improved.** Moving resources to local levels and having more qualified health workers at the health centre level who are able to accurately diagnose and manage cases are key. In addition, there is a need to empower the community to claim accountability in improved service provision.
- 2. Variations emerge in MMR in urban vs rural areas and across regions.** These inequities need to be understood in-depth, interventions need to be introduced at the regional level incorporating learnings from successful regions (and traditions), and knowledge should be transferred to regions not progressing in MMR reduction.
- 3. Geography, residence, age, and marital status matter for determining a woman's risk of maternal mortality.** The risk is higher for women within the reproductive age, and married or living with partners. The decision-making process of couples is key. Gender dynamics in urban and rural areas and family power dynamics need to be explored for effective targeting by policymakers. Male partners need to be considered in dissemination of maternal health practices.
- 4. In terms of service quality, urban facilities show higher health worker and patient caseload. However, diagnostic accuracy and availability of key infrastructure are more important in determining service quality.** The main delays for patients emerge in seeking care and treatment (quality and availability) once at the facility, and these delays vary between urban and rural areas. Patient congestion in urban areas needs to be reduced and controlled for, and further exploration of improving health system management and efficiency is needed. Policymakers need evidence of what contributes to patient congestion and whether congestion results from more 'complicated' caseloads.

Policymakers need to consider tackling the delay in seeking care and the delay upon arrival and receiving treatment. Figure 2 shows the recommendations for policymakers in urban and rural areas:

Figure 2: Recommendations for policymakers in urban and rural areas



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