

Executive Summary

Tanzania NCD Mobile Phone Survey

1. Overview

This report summarizes results from the Tanzania Noncommunicable Diseases (NCD) Mobile Phone Survey implemented in February - July 2024. NCDs are the leading cause of death worldwide and according to the World Health Organization country profiles in 2019, NCDs contribute to 34% of all deaths in the United Republic of Tanzania [1]. Efficient monitoring and surveillance are cornerstones to track the progress of NCD burden, related risk factors, and policy interventions. The systematic monitoring of risk factors to generate accurate and timely data is essential for Tanzania's ability to prioritize crucial resources and make sound policy decisions to address the growing NCD burden. With increasing access and use of mobile phones globally, opportunities exist to explore the feasibility of using mobile phone technology as an interim method to collect data and supplement household surveys.

In the survey, 4,479 individuals subscribed to Airtel, Halotel, TTCL, Tigo, Vodacom, Zantel, and Smile mobile phone networks anonymously participated in the survey using computer assisted telephone interviewing (CATI).

The survey was the culmination of significant work by the United Republic of Tanzania's Ministry of Health, including but not limited to study ethical review approval from the Tanzania National Ethics Committee, telecommunications approval from the Tanzania Utilities Regulatory Authority, and data hosting. The National Institute of Medical Research and the Ministry of Health led questionnaire development, sampling, the mass media campaign, and data collection. Technical assistance was provided by the US Centers for Disease Control and Prevention, RTI International, and AaretonBlue. Bloomberg Philanthropies Data for Health Initiative provided financial support through the CDC Foundation.

This report is structured as follows:

- Goals (Section 2)
- Design and Implementation (Section 3)
- Results (Section 4)
- Conclusions (Section 5)

2. Goals

The goal of the Tanzania Mobile Phone Survey (MPS) was to provide nationally representative estimates of indicators that can provide information on NCDs to help make programmatic recommendations to improve and enhance NCD prevention and response in the country. The results may be used to supplement results of key behavior risk factors assessed in the WHO Stepwise survey or other national surveillance systems.

The NCD MPS included 40 core questions on the following topics:

- Demographics
- Tobacco Use
- Alcohol Use
- Diet (Salt, Fruit, and Vegetable Consumption)
- Hypertension
- Diabetes
- Physical Activity

3. Design and Implementation

3.1 Design

The design parameters used for the NCD MPS are shown below in Table 1.

Table 1. MPS Design

Component	Design
Mode	CATI
Sample	A two-phase sample of mobile phone numbers generated via random digit dialing (RDD), using the mobile phone prefixes for Airtel, Halotel, TTCL, Tigo, Vodacom, Zamtel, and Smile. Tanzania stratified by age, sex, and geography (Mainland Tanzania and Zanzibar) in the second phase.
Number of Interviews	4,479 interviews, allocated proportionally across strata to the general population distribution.
Strata	12 strata, created by crossing sex (male, female) with age categories (18-29, 30-44, 45+) and geography (Mainland Tanzania and Zanzibar)
Questionnaire	The NCD MPS questionnaire consisting of 40 core questions and administered in two languages (Kiswahili and English).
Contact times	All 7 days of the week, between 8am and 8pm each day
Contact attempts	Up to 5 contact attempts over the course of two days, adjusted to 3 contact attempts during the start of the project
Cost to Respondents	None
Incentives	1 USD
Tool and Hosting	SurveyToGo, with data hosted at AaretonBlue call centers and the Tanzania Ministry of Health

3.2 Implementation

The Tanzania NCD MPS implementation process consisted of four stages: Planning and Pre-Test, Full-scale Data Collection, Data Management and Analysis, and Data Release and Use.

Full-scale data collection commenced on February 6th, 2024, and was completed on July 4th (data collection was paused from March 10th through May 10th for the Ramadan holiday). A total of 4,479 adults aged 18 years and older completed the survey.

4. Results

This section presents the following results:

- Demographics and Response Rates (section 4.1)
- Tobacco Use (section 4.2)
- Alcohol Use (section 4.3)
- Diet (section 4.4)
- Hypertension (section 4.5)
- Diabetes (section 4.6)
- Physical Activity (section 4.7)

4.1. Demographics and Response Rates

The Tanzania MPS included 4,479 interviews across twelve age by sex by geography groups. Table 2 shows the mobile phone demographic distribution compared to the UN population national statistics for sex and age. Results presented for the sections on tobacco and alcohol use, diet, hypertension, and physical activity are restricted to respondents who were 18-110 years of age.

Table 2. Mobile Phone Demographics

	<i>Mobile Phone Sample</i>	<i>National</i>
	4,479	
Sex		
Male	51.2%	47.4%
Female	48.8%	52.6%
Age		
18-29	41.8 %	40.4%
30-44	31.3%	31.4%
45+	26.9%	28.2%

By the end of data collection, all strata sample sizes were achieved.

To achieve the 4,479 interviews, we sent invitations to 27,900 mobile phone numbers over the course of the full-scale survey. Out of these, 16,761 provided some sort of response but only 14,195 consented and provided the age and sex information necessary to be eligible to participate. Of these, 56 were ineligible due to age, and 9172 respondents of eligible age were rejected due to stratum sample size being full. The result was 4,967 eligible respondents, of which 4,479 provided interviews. The interview rate was 90.2% (4,479/4,967) and the overall response rate was 45.9%, which is described in detail below. The final disposition codes for this sample are shown in Table 3.

Table 3. Final disposition codes for all dialed mobile phone numbers.

Disposition	Definition	N	Percent
1. Complete	Answered all survey questions	4479	16.1%
2. Breakoff: Eligible	Answered age and sex questions but did not answer any NCD questions	488	1.7%
3. Ineligible: Age	Under age 18	56	0.2%
4. Ineligible: Quotas	Answered age and sex questions but quotas were full	9,172	32.9%
5. Refused	Refused consent	2,558	9.2%
6. Breakoff: unknown eligibility	Answered some questions but stopped before completing eligibility	8	0.02%
7. No answer	No answer, possibly nonworking number	11,139	39.9%
Total		27,900	100.0%

In this project, the sampling design involved two Phases. Each phase had a response rate. The final response rate was the product of Phase I and Phase II response rates.

$$\text{Phase I Response Rate} = \frac{\text{Number MPNs screened}}{\text{Number MPNs dialed}}$$

Or,

$$\text{Phase I Response Rate} = \frac{14,195}{27,900} = 50.87\%$$

$$\text{Phase II Response Rate } RR6_s = \frac{IP_s}{IP_s + O_s}, \text{ for stratum } s.$$

RR₆ was derived from the 2016 Standard Definitions of the [American Association for Public Opinion Research \(AAPOR\)](#).

The overall response rate is the product of Phase I and Phase II response rates, resulting in an overall response rate for the entire NCD MPS in Tanzania:

$$RR6_{\text{overall}} = \frac{IP_{\text{overall}}}{IP_{\text{overall}} + O_{\text{overall}}} * RR_{\text{Phase I}} = \frac{4,479}{4,479 + 488} * 0.5087 = 45.9\%$$

4.2. Tobacco Use

Tobacco use is one of the most important risk factors for NCDs, shared across the world’s four leading NCDs: cardiovascular disease, diabetes, cancer, and chronic respiratory diseases. Overall, 4.3% of Tanzanian adults aged 18 years and older currently used some form of tobacco (smoked or smokeless) (8.0% among men and 0.9% among women). Overall, 3.3% of Tanzanians reported being current tobacco smokers. Men reported higher rates of current tobacco smoking than women, 6.6% and 0.4%, respectively. Men also reported higher rates of daily tobacco smoking compared to women (4.6% vs. 0.2%, respectively). Overall, 1.3% reported current smokeless tobacco use (2.2% among men and 0.6% among women). Approximately 1.2% of adult Tanzanians reported current use of electronic cigarettes or vaping devices (1.6% among men and 0.8% among women) with only 0.3% reporting daily use.

For environmental exposure to tobacco smoke, 12% of adult Tanzanians reported exposure to tobacco smoke in their home (13.2% for men and 10.9% for women). Overall, 21.6% reported exposure to tobacco smoke while at work (29.5% for men and 13.7% for women). Table 4 shows key outcomes from the NCD MPS on tobacco use.

Table 4. Tobacco use overall and by sex

Tobacco Use	Overall		Males		Females	
	%(95% CI)		%(95% CI)		%(95% CI)	
<i>Tobacco Smokers</i>						
Current tobacco smokers	3.3	(2.8 4.0)	6.6	(5.5 7.8)	0.4	(0.2 0.9)
Daily tobacco smokers	2.3	(1.9 2.8)	4.6	(3.8 5.7)	0.2	(0.1 0.5)
<i>Smokeless Tobacco Users</i>						
Current smokeless tobacco users	1.3	(1.0 1.7)	2.2	(1.6 2.9)	0.6	(0.3 1.0)
Daily smokeless tobacco users	0.6	(0.4 0.9)	1.1	(0.7 1.7)	0.2	(0.1 0.6)
<i>Electronic Cigarette Users</i>						
Current electronic cigarette users	1.2	(0.9 1.6)	1.6	(1.1 2.2)	0.8	(0.5 1.3)
Daily electronic cigarette users	0.3	(0.2 0.5)	0.5	(0.2 0.9)	0.1	(0.0 0.4)
<i>Tobacco Users (any use)</i>						
Current tobacco users	4.3	(3.7 4.9)	8.0	(6.8 9.3)	0.9	(0.6 1.4)
<i>Tobacco Smoke in Home or Work</i>						
Tobacco smoke in home	12.0	(11.0 13.1)	13.2	(11.8 14.8)	10.9	(9.6 12.4)
Tobacco smoke at work	21.6	(20.2 23.1)	29.5	(27.4 31.8)	13.7	(12.1 15.6)

4.3. Alcohol Use

Approximately one in four adult Tanzanians consumed alcohol in the past 12 months (25.3%), with men reporting alcohol in the past year more frequently than women (31.2% vs. 20.0%, respectively). Of those who consumed alcohol in the past 12 months, 8.1% reported consuming alcohol daily over the past 12 months, with 10.3% and 5.2% of men and women reporting this behavior, respectively. For men and women, the most common frequency of consuming alcohol in the past 12 months was less than once per month (30.2% and 42.5%, respectively). Approximately one in 5 (17%) of adult Tanzanians reported consuming alcohol in the past 30 days, with men being two times more likely to report this when compared to women (22.4% and 12.2%, respectively). Table 5 shows reported alcohol use overall and by sex from the NCD MPS.

Table 5. Alcohol use overall and by sex

Alcohol Use	Overall			Males			Females		
	% (95% CI)			% (95% CI)			% (95% CI)		
Alcohol use in the past 12 months	25.3	(23.9	26.7)	31.2	(29.1	33.3)	20.0	(18.2	21.8)
Alcohol Frequency among users in the past 12 months									
Daily	8.1	(6.5	10.1)	10.3	(8.0	13.1)	5.2	(3.3	8.0)
5-6 days per week	2.4	(1.6	3.7)	2.8	(1.7	4.6)	1.9	(0.9	4.0)
3-4 days per week	8.8	(7.1	10.8)	12.0	(9.5	15.1)	4.3	(2.6	6.9)
1-2 days per week	21.4	(18.8	24.1)	23.8	(20.4	27.6)	18.0	(14.4	22.2)
1-3 days per month	23.9	(21.3	26.8)	20.9	(17.7	24.5)	28.1	(23.8	32.9)
Less than once per month	35.3	(32.3	38.5)	30.2	(26.5	34.1)	42.5	(37.6	47.6)
Current alcohol users (past 30 days)	17.0	(15.9	18.3)	22.4	(20.6	24.4)	12.2	(10.7	13.7)

4.4. Diet

Regarding salt consumption, 18.0% of adult Tanzanians always or often added salt in some form to food when cooking or preparing foods. Overall, 12.6% of adult Tanzanians reported always or often adding salt or salty seasoning before eating. About one in ten, (8.2%) reported always or often eating processed foods high in salt.

For fruit and vegetable consumption, over eight out of ten (84.6%) adult Tanzanians consumed less than five servings of fruit or vegetables per day with an average of 1.6 servings of fruit and 1.8 servings of vegetables eaten per day. The average reporting servings of fruit and/or vegetables were 3.2 per day. Less than 1% reported consuming no fruits or vegetables per day (0.6%). Table 6 presents salt, fruit, and vegetable consumption overall and by sex.

Table 6. Diet overall and by sex

Diet	Overall	Males	Females
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	% (95% CI)			% (95% CI)			% (95% CI)		
Salt Consumption									
Always or often add salt or salty sauce to food before eating or as they're eating	12.6	(11.5	13.6)	13.3	(11.8	14.9)	11.9	(10.5	13.4)
Always or often add salt or salty seasoning when cooking or preparing foods	18.0	(16.8	19.3)	18.4	(16.6	20.3)	17.7	(16.0	19.4)
Always or often eat processed foods high in salt	8.2	(7.4	9.2)	9.1	(7.9	10.5)	7.5	(6.4	8.8)
Fruit Consumption									
Average number of days per week fruits are consumed	3.8	(3.7	3.9)	3.7	(3.6	3.8)	3.9	(3.8	4.0)
Average number of servings of fruit consumed per day	1.6	(1.5	1.7)	1.7	(1.6	1.8)	1.5	(1.4	1.6)
Vegetable Consumption									
Average number of days per week vegetables are consumed	5.0	(5.0	5.1)	4.7	(4.6	4.8)	5.3	(5.2	5.4)
Average number of servings of vegetables consumed per day	1.8	(1.7	1.8)	1.7	(1.6	1.8)	1.8	(1.7	1.9)
Fruit and Vegetable Consumption									
Consume less than five servings of fruits OR vegetables per day	84.6	(83.4	85.7)	84.7	(83.0	86.3)	84.5	(82.8	86.1)
Consume no fruits and vegetables	0.6	(0.4	0.9)	0.6	(0.3	1.0)	0.6	(0.3	1.0)

4.5. Raised Blood Pressure or Hypertension

Overall, 63.1% of adult Tanzanians reported ever having their blood pressure measured by a health care professional (52.5% for men, 72.7% for women). Approximately one in five adult Tanzanians, 20.8%, reported that they had ever been diagnosed by a doctor or health professional with raised blood pressure or hypertension. Among those who reported a diagnosis, almost one out of four (26.0%) were currently on medication. Table 7 shows the rates of self-reported raised blood pressure or hypertension.

Table 7. Raised blood pressure/hypertension overall and by sex

Raised Blood Pressure/Hypertension	Overall			Males			Females		
	% (95% CI)			% (95% CI)			% (95% CI)		
Had blood pressure measured by doctor or health care professional	63.1	(61.6	64.6)	52.5	(50.3	54.7)	72.7	(70.7	74.6)

activity (enough to raise your breathing rate)										
Daily	20.4	(19.1	21.7)	26.0	(24.1	28.1)	15.3	(13.7	17.0)	
5-6 days	7.2	(6.4	8.1)	9.2	(7.9	10.6)	5.4	(4.5	6.5)	
3-4 days	14.3	(13.2	15.4)	17.9	(16.2	19.7)	11.0	(9.7	12.5)	
1-2 days	15.5	(14.4	16.7)	15.3	(13.7	17.0)	15.7	(14.1	17.4)	
None	42.7	(41.1	44.3)	31.6	(29.5	33.8)	52.6	(50.4	54.8)	

5. Conclusions

NCDs and their associated risk factors have profound consequences on the individual and Tanzanian society at large. The data presented in the Tanzania NCD MPS provide a strong foundation for the development of prevention and response strategies in Tanzania. Some key outcomes included:

- Approximately 4.3% of Tanzanian adults reported being current tobacco users with 3.3% reporting current tobacco smoking and 1.3% reporting current smokeless tobacco use. Only 1.2% reported current use of electronic cigarettes. Men were more likely to report any type of tobacco use than women. Overall, 12.0% of adult Tanzanians reported exposure to tobacco smoke in their home while 21.6% reported exposure at work.
- Overall, one in four (25.3%) reported alcohol consumption in the past year, and 8.1% reported daily use. Approximately 17.0% of adult Tanzanians reported consuming alcohol in the past 30 days. Men were more likely to drink alcohol in the past 12 months, 30 days, as well as report higher frequency consumption.
- More than eight in ten adult Tanzanians, 84.6%, reported consuming less than five servings of fruits or vegetables per day.
- Approximately one in five adult Tanzanians (18.0%) reported always or often adding salt or salty sauces to food as they are cooking or preparing it.
- Overall, 20.8%, indicated ever being told that they have raised blood pressure or were hypertensive by a doctor or health professional, of which approximately one in four (26.0%) reported taking medication for their raised blood pressure or hypertension.
- Overall, 6.5% indicated ever being told that they have diabetes by a doctor or health professional, with approximately four in ten (39.6%) reporting taking medication for diabetes.
- Overall, adult Tanzanians reported averaging 2.5 days per week with 30 or more minutes of moderate physical activity.

Conclusions:

Findings from this survey help provide a national baseline on select NCD risk factors for Tanzanian adults aged 18 years and older. Results will inform the Ministry of Health in Tanzania as they improve and enhance NCD prevention and response efforts. The timely reporting of MPS results such as these will also facilitate comparisons over time and across countries.

Limitations:

The main limitation of any MPS includes the population's access to a mobile phone. Therefore, the population who do not have access to mobile phones was not represented in this survey. The results of the MPS were based on self-reports and may be influenced by recall or social desirability bias.

6. References

1. World Health Organization. Noncommunicable diseases data portal: Tanzania country profile. Geneva: WHO; 2022. <https://ncdportal.org/CountryProfile/GHE110/TZA>
2. StataCorp. 2021. Stata Statistical Software: Release 17. College Station, TX: StataCorp LLC.

Appendix: Standalone Zanzibar Estimates

Tobacco Use	Overall		Males		Females	
	% (95% CI)		% (95% CI)		% (95% CI)	
<i>Tobacco Smokers</i>						
Current tobacco smokers	4.2	(3.1 5.7)	8.5	(6.2 11.5)	0.4	(0.1 1.5)
Daily tobacco smokers	3.0	(2.1 4.4)	6.5	(4.5 9.2)	-	- -
<i>Smokeless Tobacco Users</i>						
Current smokeless tobacco users	1.5	(0.9 2.4)	2.3	(1.2 4.2)	0.7	(0.3 1.9)
Daily smokeless tobacco users	0.8	(0.4 1.7)	1.4	(0.6 3.1)	0.4	(0.1 1.4)
<i>Electronic Cigarette Users</i>						
Current electronic cigarette users	1.5	(0.9 2.6)	2.9	(1.7 5.1)	0.2	(0.0 1.6)
Daily electronic cigarette users	0.3	(0.1 1.0)	0.7	(0.2 2.0)	-	- -
<i>Tobacco Users (any use)</i>						
Current tobacco users	5.4	(4.1 7.0)	10.3	(7.8 13.6)	0.9	(0.4 2.2)
<i>Tobacco Smoke in Home or Work</i>						
Tobacco smoke in home	6.0	(4.6 7.7)	7.9	(5.6 10.9)	4.3	(2.8 6.5)
Tobacco smoke at work	12.8	(10.5 15.6)	18.0	(14.3 22.5)	7.4	(5.0 10.8)

Alcohol Use	Overall		Males		Females	
	% (95% CI)		% (95% CI)		% (95% CI)	
Alcohol use in the past 12 months	5.5	(4.2 7.2)	9.9	(7.4 13.2)	1.5	(0.8 3.0)
Alcohol Frequency among users in the past 12 months						

Daily	10.3	(4.2	22.9)	11.8	(4.8	26.1)	-	-	-
5-6 days per week	4.2	(1.0	15.9)	4.8	(1.2	18.2)	-	-	-
3-4 days per week	6.5	(2.0	18.7)	7.5	(2.3	21.4)	-	-	-
1-2 days per week	19.3	(10.2	33.6)	19.6	(9.9	35.2)	17.4	(1.0	80.9)
1-3 days per month	23.2	(13.1	37.7)	22.7	(12.0	38.7)	26.6	(3.4	78.8)
Less than once per month	36.5	(23.9	51.2)	33.5	(20.5	49.6)	56.0	(13.1	91.5)
Current alcohol users (past 30 days)	3.6	(2.5	5.0)	6.8	(4.7	9.6)	0.8	(0.3	2.0)

Diet	Overall % (95% CI)			Males % (95% CI)			Females % (95% CI)		
Salt Consumption									
Always or often add salt or salty sauce to food before eating or as they're eating	10.5	(8.6	12.7)	11.2	(8.5	14.7)	9.8	(7.4	12.8)
Always or often add salt or salty seasoning when cooking or preparing foods	14.1	(11.9	16.6)	14.4	(11.3	18.3)	13.8	(11.0	17.2)
Always or often eat processed foods high in salt	6.7	(5.3	8.6)	6.6	(4.6	9.5)	6.9	(4.9	9.6)
Fruit Consumption									
Average number of days per week fruits are consumed	4.0	(3.8	4.1)	4.2	(3.9	4.4)	3.8	(3.6	4.0)
Average number of servings of fruit consumed per day	1.8	(1.7	2.0)	2.1	(1.9	2.4)	1.6	(1.4	1.7)
Vegetable Consumption									
Average number of days per week vegetables are consumed	3.3	(3.1	3.4)	3.0	(2.8	3.2)	3.5	(3.3	3.7)
Average number of servings of vegetables consumed per day	1.1	(1.0	1.2)	1.1	(0.9	1.2)	1.2	(1.0	1.3)
Fruit and Vegetable Consumption									
Consume less than five servings of fruits OR vegetables per day	85.0	(82.5	87.2)	82.2	(78.2	85.7)	87.5	(84.1	90.2)
Consume no fruits and vegetables	2.1	(1.4	3.3)	1.9	(0.9	3.8)	2.4	(1.3	4.2)

Raised Blood Pressure/Hypertension	Overall % (95% CI)	Males % (95% CI)	Females % (95% CI)
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Had blood pressure measured by doctor or health care professional	74.5	(71.6	77.3)	62.4	(57.7	66.9)	85.3	(81.8	88.3)
Diagnosed by doctor or health care professional with raised blood pressure/ hypertension	25.8	(22.7	29.2)	21.5	(17.0	26.7)	28.7	(24.6	33.2)
Currently taking medication for raised blood pressure/ hypertension	23.0	(17.5	29.6)	17.8	(10.0	29.7)	25.5	(18.6	33.9)

Raised Blood sugar/diabetes	Overall			Males			Females		
	% (95% CI)			% (95% CI)			% (95% CI)		
Had blood sugar measured by doctor or health care professional	60.6	(57.4	63.8)	49.2	(44.5	54.0)	70.8	(66.5	74.7)
Diagnosed by doctor or health care professional with raised blood sugar/ diabetes	8.1	(6.2	10.6)	8.4	(5.4	12.9)	8.0	(5.6	11.2)
Currently taking medication for raised blood sugar/ diabetes	28.3	(17.2	42.8)	15.8	(4.8	41.5)	36.8	(20.9	56.2)

Physical Activity	Overall			Males			Females		
	% (95% CI)			% (95% CI)			% (95% CI)		
Average number of days per week with 30 or more minutes of moderate physical activity	2.5	(2.3	2.7)	3.2	(2.9	3.5)	1.9	(1.7	2.2)
Days in the past week with 30 or more minutes of physical activity (enough to raise your breathing rate)									
Daily	23.2	(20.6	26.1)	30.3	(26.1	34.9)	16.9	(13.8	20.5)
5-6 days	5.7	(4.4	7.4)	7.2	(5.1	10.1)	4.4	(2.9	6.6)
3-4 days	11.7	(9.8	14.0)	13.4	(10.5	17.0)	10.2	(7.7	13.2)
1-2 days	11.9	(9.9	14.1)	12.1	(9.3	15.6)	11.6	(9.1	14.8)
None	47.4	(44.2	50.7)	36.9	(32.4	41.6)	56.9	(52.5	61.3)