TANZANIA PUBLIC
Health Bulletin

The United Republic of Tanzania
Ministry of Health

Issue 14 | July, 2025 | Registered as a Newspaper: ISNN 2665-0576

Mortality among Measles Cases from Katavi region in Tanzania: A Cross-Sectional Study

ESSENTIAL FEATURES

The Official Publication of the Ministry of Health
Government City -Mtumba | P.O. Box 743 | Dodoma | Tanzania

Publication information: *Bulletin information and instruction to authors can be found online at: https://www.moh.go.tz/index.php/tanzania-health-bullettin*

This publication was made possible by financial support from the Bloomberg Philanthropies Data for Health Initiative through the CDC Foundation. Its contents are solely the responsibility of the authors and don't necessarily represent the official views of Bloomberg Philanthropies, the CDC Foundation, or the U.S. Centers for Disease Control and Prevention.

Contents

Integrated Disease Surveillance and Response (IDSR): Cumulative report for six months, January – June 2024 (Epidemiological week 1-26)

Danstan Ngenzi[1, 2*], Solomon Moshi[1, 2], Emmanuel Mwakapasa[1, 2], Frank Matullu[1, 2], Rogath Kishimba[1, 2], Muzzna Ujudi[1, 2], Edwin Chao[1, 2], Beatrice Mulima[1, 2], Welema Solomon[1,2], Witness Mchwampaka[1,2], Fidel Ronjino[1,2], King Wilson[1, 2], Ramadha Nyamalizi[1,2], Mwendwa Mwenesi[1, 2], Georgina Temba[1,2], Julius Massaga[3], Vida Mmbaga[1, 2], Ntuli Kapologwe[1,2], Otilia Gowele[1,2] and Grace Magembe[1]

***Corresponding Author:** Danstan Ngenzi; email: danstan.ngenzi@afya.go.tz

ABSTRACT

Introduction: The Ministry of Health continued to carryout surveillance of reportable diseases and conditions. This paper reports the cumulative data for the period of 6 months from January to June 2024, which are World Health Organization (WHO) epidemiological weeks 1-26. Data were analyzed to assess regional and national performances in terms of timeliness and completeness reporting as well as determining the cumulative number of cases and deaths, and distribution by month and region. Performance was assessed based on the set national standard of ≥ 90%.

Analysis: All 26 regions of Tanzania Mainland submitted weekly reports to the national level with an overall average performance for all months of 93.7% for timeliness and 97.8% for completeness. Cumulatively, a total of 343682 cases and 73 deaths were reported for all IDSR immediate reportable diseases and conditions. The most commonly reported condition was diarrhea accounting for 46.9% (161,292) of all cases and was reported from all 26 regions. Majority of diarrhea cases were reported from Mara region (8.2%), Dodoma (8.1%) Rukwa (7.0%) Arusha (6.7%) and Dar es Salaam (6.5%). The months of March had the highest number of cases (70,275; (20.4%)). Of the 73 reported deaths, majority were caused by cholera (n=43, 58.9%). The condition with highest case fatality rate was suspected cases of cholera with (1.5%) 43 of 2871 persons dying from suspected cholera.

Conclusions: The IDSR analyzed data for January -June 2024 (WHO epidemiological week 1-26) showed that the performance based on timeliness and completeness were high based the set national standard of ≥90%. This is encouraging that the Government is better position as the system could manage to detect and report for immediate response to avert disease outbreak to happen. In addition, there is an urgent need for the Government to instituting new and reinforcing available preventive and control measures against cholera as continued to be the leading reportable conditions. Based on high fatality rate of cholera, the Government need reinforce preventive measures such as ensuring community drink and using safe water, washing hands often with soap and safe water (i.e., before, during and preparing food, before eating and after using toilet), safely management of sanitation facilities (using toilet), and cooking food well, covering and eating hot food.

INTRODUCTION

In Tanzania surveillance for reportable diseases and conditions under the Integrated Disease Surveillances and Response (IDSR) are electronically collected, and published weekly and monthly under the Ministry of Health (MoH). It should be noted that IDSR is a strategy for multi-disease surveillance of selected priority diseases or conditions. It links the community, health facility, district and national levels, for providing immediate information for helping public health managers and decision-makers improve detection and response to the leading causes of illness, death, and disability in African countries.

The present paper reports cumulative IDSR data for a period of 6 months of January to June 2024, that corresponds to WHO Epidemiological week 1-26. Data were analyzed to assess the national and regional performances in terms of timeliness and completeness reporting as well as determining the cumulative number of cases and deaths, and distribution bay age, sex, month and region.

ANALYSIS OUTCOME

Health Facility Performance

All 26 regions of Tanzania Mainland submitted weekly reports of selected priority reportable conditions to the national level. The overall performance for timeliness and completeness for January to June 2024 was 97.8% and 93.7% respectively. The performance of timeliness and completeness were above the set national standard of ≥ 90%. The Month of June had the lowest scores for timeliness (88.4%) and completeness (95.5%), and were below and above the set national standard of ≥ 90% respectively. (Table 1)

Table 1: Average Timeliness and Completeness of Health Facility Reporting by Month, January – June 2024

Month	% of Completeness	% of Timeliness
January	96.4	90.3
February	100	100
March	97	90.2
April	97.7	93.4
May	100	100
June	95.5	88.4
Overall Performance	97.8	93.7

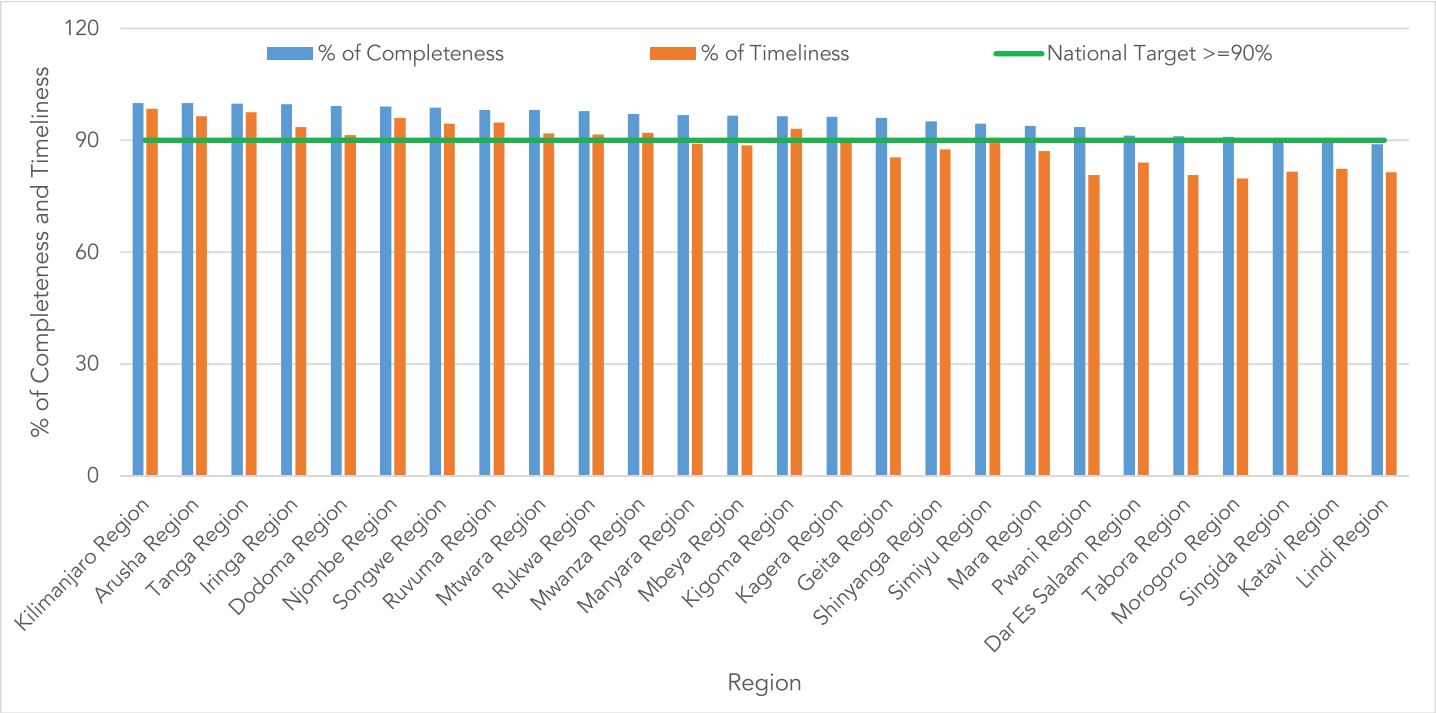

Figure 1: Timeliness and Completeness of Health Facility Reporting from the 26 Regions, January – June, 2024

The overall timeliness and completeness of health facilities reporting by all 26 regions are presented in Figure 1. All regions except Lindi and Katavi regions had the overall completeness meeting the national target of ≥ 90%. A total of 15 regions health facilities reporting for timeliness met the national target of ≥ 90%.

DISTRIBUTION OF CASES AND DEATHS

Table 2 provides the number of cases and deaths caused by immediate reportable conditions each month during January through June 2024. Total reported cases for all reportable diseases and conditions were 343,682 cases and 73 deaths. The most commonly reported condition was diarrhea accounting for 46.9% (161,292) of all cases and was reported from all 26 regions. The month total cases varied from 45,790 in February to 70,275 in March. The condition with highest case fatality rate was suspected cases of cholera, 40 (1.5%) of 2871persons with suspected cholera died

Table2: Number of Cases and Deaths Caused by Reportable Conditions, by Month, January – June 2024

Condition/Disease	January		February		March		April		May		June		Total		CFR %
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	
AFP	55	0	89	0	149	0	113	0	210	0	117	0	733	0	0.0
Animal Bites	1746	0	1212	0	1998	0	1824	0	2274	0	1848	0	10902	0	0.0
Anthrax	3	0	8	0	2	0	0	0	6	0	3	0	22	0	0.0
Bloody Diarrhoea	6	0	1	0	0	0	0	0	8	0	0	0	15	0	0.0
Cholera	311	7	574	7	853	7	457	3	350	9	326	10	2871	43	1.5
CSM	8	0	18	0	15	0	11	0	9	0	1	0	62	0	0.0
Dengue Fever	3	0	4	0	3	0	0	0	0	0	0	0	10	0	0.0
Diarrhoea	31021	0	21336	0	30628	0	23358	0	29635	0	25314	0	161292	0	0.0
SARI	1629	10	1801	5	2219	7	1292	5	1692	3	1358	0	9991	30	0.3
Measles	113	0	201	0	381	0	430	0	581	0	345	0	2051	0	0.0
Pneumona	19248	0	17525	0	29452	0	22211	0	25836	0	17740	0	132012	0	0.0
Rabies	3	0	4	0	1	0	7	0	8	0	5	0	28	0	0.0
Typhoid	3984	0	3017	0	4574	0	3632	0	4865	0	3621	0	23693	0	0.0
Total	58130	17	45790	12	70275	14	53335	8	65474	12	50678	10	343682	73	0.0

Key: AFP = Acute Flaccid Paralysis; SARI= Severe Acute Respiratory Illness; CSM = Cerebrospinal Meningitis

Table 3: Number of Reported Cases of Illnesses by Region, January – June, 2024.

Region	AFP	Animal Bites	Anthrax	Bloody Diarrhea	Cholera	CSM	Dengue Fever	Diarrhea	SARI	Measles	Pneumonia	Rabies	Typhoid
ARUSHA	30	742	21	1	1	1	0	10836	495	104	14582	9	544
DAR ES SALAAM	53	532	0	0	95	0	10	10525	2372	48	8087	1	899
DODOMA	30	926	0	0	85	0	0	12961	3320	85	7511	0	1372
GEITA	40	221	0	0	16	0	0	3867	0	52	3658	1	731
IRINGA	0	0	0	0	0	0	0	10	0	0	8	0	0
IRINGA	15	263	0	1	0	0	0	1543	255	60	1550	2	244
KAGERA	52	458	0	0	217	0	0	6079	7	197	4433	0	1296
KATAVI	20	312	0	0	59	0	0	3414	0	31	2257	1	724
KIGOMA	47	487	0	5	35	0	0	6095	753	403	6500	1	528
KILIMANJARO	42	522	1	0	0	0	0	3457	0	151	7413	1	167
LINDI	15	240	0	0	38	0	0	2846	180	35	1982	0	891
MANYARA	26	517	0	1	71	1	0	5204	885	28	8439	0	1892
MARA	31	624	0	0	135	0	0	13211	702	121	6079	0	1405
MBEYA	26	391	0	0	0	6	0	5076	126	36	5388	1	1643
MOROGORO	26	564	0	0	219	0	0	8920	213	28	7415	1	2008
MTWARA	18	208	0	0	45	3	0	4522	73	13	3272	1	265
MWANZA	52	456	0	0	614	30	0	7597	144	25	4856	0	675
NJOMBE	7	175	0	0	0	0	0	806	0	25	1406	0	617
PWANI	14	528	0	5	27	0	0	5610	16	209	5018	0	468
RUKWA	11	443	0	0	14	1	0	11287	64	4	4424	2	989
RUVUMA	21	497	0	0	29	0	0	6367	12	63	5498	1	1647
SHINYANGA	26	262	0	1	294	0	0	5772	0	62	4750	3	1290
SIMIYU	37	270	0	0	655	0	0	3271	0	97	1634	0	358
SINGIDA	17	517	0	0	208	0	0	5475	316	55	2529	1	931
SONGWE	15	77	0	0	0	0	0	2571	0	54	2045	0	686
TABORA	32	259	0	0	9	1	0	6533	48	42	3585	2	1149
TANGA	30	411	0	1	5	19	0	7447	10	23	7701	0	274
TOTAL	733	10902	22	15	2871	62	10	161302	9991	2051	132020	28	23007

During the 6 months beginning January 2024, a total of 343,682 cases of reportable conditions were reported whereby all 26 regions reported diarrhea and pneumonia. Iringa region reported few cases of diarrhea and pneumonia while dengue was only reported in Dar es Salaam region. and typhoid with one case of smallpox reported in Tanga region. Most cases, 46.9% (161,292) were due to diarrhea and majority of cases were reported from Mara (8.2%), Dodoma (8.1%) Rukwa (7.0%) Arusha (6.7%) and Dar es Salaam (6.5%) regions (Table 3).

CONCLUSIONS

The IDSR analyzed data for January -June 2024 (WHO epidemiological week 1-26) showed that the performance based on timeliness and completeness were high based the set national standard of ≥90%. This is encouraging that the Government is better position as the system could manage to detect and report for immediate response to avert disease outbreak to happen. In addition, there is an urgent need for the Government to instituting new and reinforcing available preventive and control measures against cholera as continued to be the leading reportable conditions. Based on high fatality rate of cholera, the Government need reinforce preventive measures such as ensuring community drink and using safe water, washing hands often with soap and safe water (i.e., before, during and preparing food, before eating and after using toilet), safely management of sanitation facilities (using toilet), and cooking food well, covering and eating hot food.

ACKNOWLEDGMENTS

The authors thank the MoH for granting permission to access, analyze and publish the IDRS information and to health workers national wide for their participation in collecting and submitting this information to the national level.

AUTHOR DETAILS

[1]Ministry of Health

[2]Department of Preventive Services, Epidemiology and Diseases Control Section

[3] Tanzania Public Health Bulletin, Editorial Office, Dar es Salaam

MUHTASARI
Mkakati wa Ufuatiliaji na Udhibiti wa Magonjwa ya Mlipuko (IDSR): Ripoti ya Miezi Sita, Januari -Juni 2024 (Wiki 1-26)

Danstan Ngenzi[1,2*], Solomon Moshi[1,2], Emmanuel Mwakapasa[1,2], Frank Matullu[1,2], Rogath Kishimba[1,2], Muzzna Ujudi[1,2], Edwin Chao[1,2], Beatrice Mulima[1,2], Welema Solomon[1,2], Witness Mchwampaka[1,2], Fidel Ronjino[1,2], King Wilson[1,2], Ramadha Nyamalizi[1,2], Mwendwa Mwenesi[1,2], Georgina Temba[1,2], Julius Massaga[3], Vida Mmbaga[1,2], Ntuli Kapologwe[1,2], Otilia Gowele[1,2] and Grace Magembe[1]

***Kwa Mawasiliano:** Danstan Ngenzi; email: danstan.ngenzi@afya.go.tz

Usuli: Wizara ya Afya (WAF) hutumia mkakati wa Ufuatiliaji na Udhibiti wa Magonjwa ya Mlipuko (IDSR) kufuatilia magonjwa na hali zinazoripotiwa kugundua na kudhibiti magonjwa ambayo ni chanzo cha vifo, na ulemavu. Makala hii inaripoti matokeo ya uchambuzi wa taarifa za IDSR kwa kipindi cha miezi 6 cha Januari hadi Juni 2024 ambapo ni wiki ya 1-16 ya Shirika la Afya Duniani (WHO). Takwimu zilichambuliwa kutathmini utendaji wa mkoa katika utoaji wa taarifa na kufahamu idadi ya visa na vifo vya kila ugonjwa kulingana na mwezi na mkoa. Utendaji utatathminiwa kulingana na kiwango cha kitaifa cha asilimia 90 au zaidi.

Uchambuzi: Mikoa yote 26 ya Tanzania Bara iliwasilisha ripoti za kila wiki kwa ngazi ya kitaifa. Mikoa ilipata wastani wa asilimia 93.7 kwa wakati unaofaa (ufanisi) (kwa mfano, asilimia ya wilaya zinazoripoti kwa wakati kwa ngazi ya kitaifa) na asilimia 97.8 kwa ukamilifu (yaani, asilimia ya wilaya zinazotoa ripoti kamili kwa ngazi ya kitaifa). Katika kipindi cha miezi 6, jumla ya visa 343,682 na vifo 73 viliripotiwa kwa magonjwa yote IDSR. Ugonjwa ulioripotiwa zaidi ni kuhara (n = 161,292, asilimia 46.9) kati ya visa vilivyoripotiwa kutoka mikoa yote ambapo visa vingi viliripotiwa kutoka mikoa ya Mara (asilimia 8.2), Dodoma. Mwezi wa Machi ulikuwa na visa vingi, visa 70,275 kati ya 343,682 (asilimia 20.4). Kati ya vifo 73 vilivyoripotiwa, visa vingi vilisababishwa na kipindupindu (n = 43, asilimia 58.9). Ugonjwa uliokuwa na kiwango cha juu cha vifo ilikuwa ni kipindupindu. Kati ya visa 2871 vilivyoshukiwa kuwa na ugonjwa wa kipundupindu, 43 walikufa (CFR = asilimia 1.5).

Hitimisho: Uchambuzi wa takwimu za IDSR ya Januari – Juni (wiki ya 1-26 ya WHO) ulionyesha kuwa utendakazi kwa kuzingatia wakati unaofaa (ufanisi) na ukamilifu ukiwa wa juu kulingana na kiwango cha kitaifa cha aslimia ≥90. Hili ni jambo la kutia moyo kuwa Serikali kuwa iko katika nafasi nzuri zaidi kwani mfumo huu wa ufuatiliaji unaweza kubaini na kutoa taarifa kwa ajili ya kuchukua hatua za haraka ili kuzuia mlipuko wa magonjwa kutokea. Aidha, kuna haja ya haraka kwa Serikali kuanzisha na kuimarisha hatua zilizopo za kujikinga na kudhibiti ugonjwa wa kipindupindu kwa vile unaendelea kuwa hali inayoongoza kuripotiwa. Kwa kuzingatia kiwango kikubwa cha vifo vya ugonjwa wa kipindupindu, Serikali inahitaji kuimarisha hatua za kinga kama vile kuhakikisha jamii inakunywa na kutumia maji safi na salama, kunawa mikono mara kwa mara kwa sabuni na maji salama (yaani, kabla, wakati na kuandaa chakula, kabla ya kula na baada ya kutoka chooni), usimamizi kwa salama wa huduma za usafi wa mazingira (kutumia choo), na kupika chakula vizuri, kufunika na kula chakula cha moto.

Prevalence and Risk Factors of Hypertension among Patients with Hydrocele in Dar es-salaam and Pwani Regions, Tanzania

Sephord Ntibabara[1,2*], Evelyne Ngoli[1,2], Faraja Ollomyi[3], Roza Ernest[2], Peter Torokaa[1,2], Dorica Burengelo4, Stephen Mbwambo[3] Nsiade Lema[2], Clarer Jones[3], Faraja Lyamuya[3]

***Corresponding Author:** Sephord Ntibabara; email: sephordsaul@gmail.com

ABSTRACT

Introduction: Hypertension is one of the leading causes of premature death worldwide. In Tanzania, about 26% of all young adults aged 30-49 have hypertension. Lymphatic Filariasis (LF) is prevalent in coastal regions of Tanzania. Patients with LF who develop hydrocele are at high risk of developing hypertension due to their physical inactive life. Magnitude and factors associated with hypertension among hydrocele patients have not been determined. The study was done to determine the prevalence of hypertension and its associated factors among individuals with hydrocele due to LF in the Pwani and Dar-es Salaam regions.

Methodology: Analytical cross-sectional study was performed on patients with LF hydrocele who underwent pre-surgery screening. Hypertension was defined as systolic Blood Pressure (BP)≥140 mmHg and diastolic BP ≥90 mmHg. The Chi-square test was done to determine the significance of the differences in hypertension among variables. Modified multivariate Poisson regression analysis was performed to determine the association of variables by adjusting for confounders. P-value ≤0.05 was statistically considered significant.

Results: Among 494 patients with LF hydrocele analyzed, (n=214) 43.3% (95% CI: 39.0- 47.8) had hypertension. Patients aged 45 years and above had high risk (adjusted prevalence ratio (APR) 2.3, 95% CI:1.2-4.5) of developing hypertension. Being married was associated with hypertension as compared to being single (APR 1.8, 95% CI: 1.0-3.3). Obese patients had increased risk (APR 1.48, 95% CI:1.0-2.2) of developing hypertension as compared to those with normal Body Mass Index.

Conclusion: High hypertension prevalence was observed among hydrocele patients. Age of ≥45 years, obesity and being married was independently associated with hypertension. Ministry of Health (MoH) should establish the integrated program between Non-Communicable Diseases such as hypertension in managing patients with lymphatic filariasis hydrocele.

Key words: Hypertension, Hydrocele, Lymphatic Filariasis

INTRODUCTION

Globally, about 1.28 billion individuals aged between 30 to 79 are estimated to have hypertension [1]. The burden of the disease is rapidly increasing in Africa with the prevalence reaching 27.9% in 2019 [2]only 1 in 3 are aware of their hypertension status, and ≈8% have their blood pressure controlled. This rising burden widens the inequality gap, contributes to massive economic hardships of patients and carers, and increases costs to the health system, facing challenges such as low physician-to-patient ratios and lack of access to medicines. Established risk factors include unhealthy diet (high salt and low fruit and vegetable intake. This is attributed to changes in lifestyle with increasing practices of risky behaviors such as high alcohol intake and cigarette smoking. In low-income countries in 2019, alcohol consumption was reported to be higher (45.4%) compared to high-income countries (38.7%) [2]only 1 in 3 are aware of their hypertension status, and ≈8% have their blood pressure controlled. This rising burden widens the inequality gap, contributes to massive economic hardships of patients and carers, and increases costs to the health system, facing challenges such as low physician-to-patient ratios and lack of access to medicines. Established risk factors include unhealthy diet (high salt and low fruit and vegetable intake. The national hypertension survey revealed that 26% of Tanzanians aged between 25years to 64years of age have hypertension [3,4]. The same survey reported 32.4% of the Tanzanian population not engaging in vigorous activity [3]. In 2020, in Tanzania, 4 million Tanzanians were reported to have hypertension, whereby 82.4% have undiagnosed disease, and only 0.1 million individuals were on control strategies [5].

The burden of disease was believed to be high among the rich and also to those who live in urban areas, however, the pattern of disease has currently changed with the increasing burden in rural areas. Studies have revealed a 48.3% prevalence of hypertension in rural areas in Tanzania, showing the shift over a short period of time [6]. There is an increasing risk of hypertension among individuals with comorbidities such as Human Immuno-Deficiency Virus (HIV) and diabetes [7,8]respectively. The prevalence of both conditions increases nearly exponentially with age and body-mass index, such that 67% of diabetics had blood pressures ≥140/90 mm Hg (or were taking antihypertensive medication. In the United

States 73.6% of individuals with diabetes were reported to have hypertension [8]respectively. The prevalence of both conditions increases nearly exponentially with age and body-mass index, such that 67% of diabetics had blood pressures ≥140/90 mm Hg (or were taking antihypertensive medication, and in Tanzania about 55.2% of individuals with Diabetes Mellitus had hypertension as well [9]. Lymphatic filariasis is one among the neglected tropical disease in Sub Saharan Africa affecting poor communities.

In Tanzania, it is most prevalent in coastal regions, with a prevalence of 5.8% being reported [10]. Individuals with LF can live with the disease for about 40 years where most of them develop into hydrocele. This wide duration exposes them to a long inactive lifestyle, which exposes them to the risk of hypertension and other non-communicable diseases. The few available studies have revealed Lymphatic Hypertension due to obstruction of the lymphatic system [11]. Up-to-date studies that explain the association between hypertension and LF are very limited. The study examines the prevalence of hypertension among individuals living with LF and to determine the risk factors associated. The results could be used to create awareness to the public on the high hypertension burden among LF patients for its prevention and control.METHODOLOGY

Study setting

Dar es salaam and Pwani regions are located at the Eastern part of Tanzania along the Indian ocean. Dar es Salaam region covers an area of 1,393km^2. Dar es Salaam is entirely boarded by Pwani region from all sides apart from the east, where it is boarded by the Indian Ocean. According to 2022 census Dar es salaam region has a population of 5 million people. Pwani region is the Eastern coastal region of Tanzania which is bordered by Morogoro region to the West, Tanga region to the North, Indian ocean at the North East and South East, Dar es Salaam on the East and Lindi region to the South. Most people in the Pwani region reside in areas with limited access to healthcare services compared to Dar es Salaam.

Study Design, Setting and Data Collection

A cross-sectional study was conducted. The study recruited LF patients found to have hydrocele and with surgical indications identified during the Transmission Assessment Surveys (TAS) which were conducted in Dar es Salaam and Pwani regions in the year 2021 to 2022. The information was collected from patients prior to the surgery. Microsoft excel sheet was developed for data collection. The blood pressure (BP) measurements were collected using a calibrated digital BP machine while weight and height were collected using the WHO certified weighing scales that were available in each health facility. Demographic characteristics collected included age, occupation, residency, education and marital status, while clinical data which were independent to hypertension were, Body Mass Index (BMI), diabetes, use of ivermectin and albendazole and duration of living with hydrocele. Hypertension was defined as Systolic BP ≥140 mmHg and Diastolic BP ≥ 90 mmHg diastolic was termed "hypertensive" or "elevated BP" as stipulated in Tanzania Standard Treatment Guidelines [12] as measured by the steps taken or weight shifting between legs, may be a useful tool to assess the comfort of dairy cattle. These behaviors increase when cows stand on uncomfortable surfaces or are lame. The objective of this study was to compare 2 measures of restless behavior, stepping behavior and changes in weight distribution, on 2 standing surfaces: concrete and rubber. Twelve cows stood on a weighing platform with 1 scale/hoof for 1 h. The platform was covered with either concrete or rubber, presented in a crossover design. Restlessness, as measured by both the frequency of steps and weight shifting (measured as the standard deviation of weight applied over time to the legs.

Data Analysis

Data was cleaned using Microsoft Excel version 2013. Descriptive analysis was performed and frequency distribution with relative frequencies (%) for categorical variables and a measure of central tendency for asymmetrically distributed continuous variables, median with interquartile range (IQR) were presented in tables. The chi-square test was used for categorical variables to assess differences in distribution based on the hypertension status. Modified Poisson regression analyses (bivariate and multivariate) were performed to assess the relationship between independent variables with hypertension (dependent) by adjusting for the confounders. Factors with a p-value of < 0.20 in the bivariate analyses were included in the multivariable model using forward selection. Crude and adjusted prevalence ratios with their corresponding 95% confidence intervals (CI) were presented. A significance level was set at p-value ≤ 0.05.

Ethical Clearance

Approval for conducting the analysis of secondary data which did not require ethical clearance was obtained from National Neglected Tropical Diseases Control Program (NTDCP). Patients Identification was removed during the analysis and confidentiality was ensured throughout the study.

RESULTS

Social demographic characteristics of the study participants

A total of 494 patients with Lymphatic Filariasis Hydrocele (PLFH) was analyzed. Majority of the patients, 466 (94.3%) were from Dar es Salaam. The median age (Inter Quartile Range) was 50(IQR:42-60) years, and the majority of them, 312 (63.2%), had the age above 45 years. Of all the patients, 435 (88.1%) had primary education. About two thirds, 288 (63.7%) were of white-collar job. Among all the patients about three quarter 368 (74.5%) were married. Majority 407 (82.4%) had poor financial status. The median fasting blood sugar level (IQR) was 5.2(IQR: 4.8-5.9). The mean Body Mass Index (standard deviation) was 25.1 (14.0). Majority of patients 378(76.5%) have never used ivermectin and albendazole medication in their life time. The median duration of which patients have lived with the hydrocele (standard deviation) was 8.3(9.0) where majority 470 (95.0%) lived with hydrocele for less than 30 years. Details about hypertension risk factors characteristics are shown in Table 1

Table 1: Social demographic characteristics of PLFH in Dar es Salaam and Pwani in 2022 (n=494)

Variable	Frequency (n)	Percentage (%)
Age(years)		
≤ 35	63	12.7
36-45	119	24.1
Above 45	312	63.2
Median (IQR)	50.1 (42.0-60.0)	
Education		
Never attended school	26	5.3
Primary School	435	88.0
Secondary School	23	4.7
Tertiary education	10	2.0
Residency		
Dar es Salaam	466	94.3
Pwani	28	05.7
Occupation		
Blue collar job	164	36.3
White collar job	288	63.7
Marital status		
Single	71	14.4
Married	368	74.5
Divorced	36	7.3
Widowed	19	3.8
Financial status		
Good financial status	87	17.6
Poor financial status	407	82.4
Diabetes		
Diabetic	41	08.3
Non-diabetic	453	91.7
Median glucose conc*(IQR)	5.2 (4.8-5.9)	
Body Mass Index (BMI)		
Underweight	15	03.0
Normal	265	53.6
Overweight	139	28.1
Obese	75	15.2
Median (IQR)	24.2 (21.8-27.3)	
Use of Ivermectin and Albendazole		
Yes	116	23.5
No	378	76.5
Duration with hydrocele condition (years)		
Less than 5	221	44.7
5-30	249	50.4
Above 30	24	04.9
Median (SD)	5.0(3-10)	

Key: SD= Standard Deviation; Blue Collar = Manual Labor; White Collar = Professional; Poor financial status = Low financial capacity to meet basic needs

Distribution of Hypertension Prevalence among PLFH in Dar es Salaam and Pwani Regions

Among 494 patients with hydrocele analyzed, prevalence of hypertension in Dar es Salaam and Pwani was 34.2% (n=169, 95% CI 30.1-38.5). Hypertension prevalence increased with an increase in age from 11 (17.5%) to 160 (51.3%) for patients with age of ≤35and above 45 years respectively, the difference was statistically significant (p=<0.001). Married LF patients had the highest hypertension prevalence, 174 (47.3%), compared to LF hydrocele patients who were not married, had the lowest prevalence of hypertension, 15 (21.1) (p=0.001). About 42 (30.2%) and 14 (18.7%) of patients who were overweight and had obesity had hypertension (p=0.003). Among individuals who took ivermectin and albendazole 36 (31.0%) had hypertension (p=0.556). Among individuals who had diabetes, 32 (78.0%) had hypertension (p=0.017). The details about distribution of prevalence of hypertension among PLFH in Dar es Salaam and Pwani regions in 2022 are shown in Table 2.

Table 2: Distribution of Prevalence of Hypertension among PLFH in Dar es Salaam and Pwani Regions in 2022 (N=494)

Variable	Without hypertension n(%)	With hypertension n (%)	Chi-Square P-Value
Age (years)			
≤35	20 (37.7)	33 (62.3)	
36-45	50(53.2)	44 (48.8)	
Above 45	225 (73.5)	92 (26.5)	<0.001
Education			
Never attended school	23 (88.5)	3 (11.5)	
Primary School	285 (65.5)	150 (34.5)	
Secondary School	12 (52.2)	11(47.8)	0.030
Tertiary education	5 (50.0)	5 (50.0)	
Marital Status			
Married	259 (70.4)	109 (29.6)	
Single	30 (42.3)	41 (57.7)	0.001
Divorced	24 (66.7)	12 (33.3)	
Widowed	12 (63.2)	7 (36.8)	
Residency			
Dar es salaam	304 (65.2)	162 (34.8)	0.463
Pwani	21 (75.0)	7 (25.0)	
Occupation			
Blue collar job	108 (65.8)	56 (34.2)	0.980
White collar job	190 (66.0)	98 (34.0)	
Financial status			
Good financial status	57 (66.3)	29 (33.7)	0.904
Poor financial status	267 (65.6)	140 (34.4)	
Duration of living with hydrocele (years)			
Less than 5	129 (58.4)	92 (41.6)	
5-30	177 (71.1)	72 (28.9)	
Above 30	18 (78.3)	5 (21.7)	
BMI			
Underweight	8 (53.3)	7 (46.7)	
Normal weight	159 (60.0)	106 (40.0)	
Overweight	97 (69.8)	42 (30.2)	0.003
Obesity	61 (81.3)	14 (18.7)	
Use of Ivermectin and Albendazole			
Yes	80 (69.0)	36 (31.0)	
No	245(64.8)	133(35.2)	0.556
Diabetes			
Yes	9 (22.0)	32 (78.0)	
No	293 (64.7)	160(35.3)	0.084

Factors Associated with Hypertension among Patients with Hydrocele in Dar es Salaam and Pwani Regions in 2022

Patients with hydrocele of age above 45 years had more than two times risk (APR) (2.3, 95% CI: 1.18-4.46) of developing hypertension as compared to patients with LF with the age below 35 years. It was also revealed that patients with LF hydrocele who were married had a 1.8 risk (APR 1.8, 95% CI: 1.01-3.3) of developing hypertension as compared to those who are not-married. On top of that it was found that obesity was associated with hypertension such that patients with LF hydrocele who also had obesity were at increased risk (APR 1.5, 95% CI: 1.01-2.2) of developing hypertension as compared to those who had normal BMI. Details about the associations between risk factors and hypertension are presented in Table 3

Table 3: Factors Associated with Hypertension among Patients with Hydrocele in Dar es Salaam and Pwani Regions in 2022 (N=494)

	Hypertension n (%)	Crude Analysis			Adjusted Analysis		
Variable		**cPR**	**95% CI**	**P**	**aPR**	**95% CI**	**p**
Age (years)							
Less than 35	160 (51.28)	1					
36-45	11 (17.46)	2.07	1.07-4.01	0.031	1.84	0.91-3.72	0.088
Above 45	43 (36.13)	2.94	1.59-5.41	0.001	2.30	1.18-4.46	0.013
Education					*		
Never attended school	15 (57.69)	1.92	0.56-6.64	0.301			
Primary School	190 (43.68)	1.46	0.46-4.55	0.519			
Secondary School	6 (26.09)	0.87	0.22-3.48	0.843			
Tertiary education	3 (30)	1					
Residency					*		
Pwani	200(42.92)	1.17	0.68-2.00	0.581			
Dar es Salaam	14 (50.00)	1					
Marital Status					*		
Married	174 (47.28)	2.24	1.32-4.48	0.003	1.81	1.01-3.30	0.047
Widowed	15 (21.13)	1.99	0.84-4.70	0.115	1.42	0.55-3.68	0.468
Divorced	17 (47.22)	2.24	1.12-4.48	0.023	1.95	0.92-4.15	0.082
Single	8 (42.11)	1					
Occupation					*		
White collar job	71 (43.28)	0.99	0.74-1.33	0.971			
Blue collar job	124 (43.06)	1					
Financial status							
Poor financial status	42 (48.28)	0.88	0.62-1.23	0.439			
Good financial status	172 (48.26)	1					
Duration of living with hydrocele (years)							
5-30	87 (39.37)	1.18	0.89-1.56	0.235			
Above 30	116 (46.59)	1.18	0.89-1.56	0.235			
Less than 5	11 (45.83)	1					
BMI							
Underweight	4 (26.67)	0.71	0.26-1.94	0.509	0.88	0.27-2.87	0.829
Overweight	99 (37.36)	1.29	0.95-1.76	0.107	1.32	0.96-1.83	0.091
Obesity	67 (48.20)	1.57	1.10-2.24	0.013	1.48	1.01-2.19	0.045
Normal weight	44 (58.32)	1					
Diabetes							
Yes	53 (45.69)	1.46	0.96-2.22	0.075	1.31	0.83-2.06	0.250
No	161 (42.59)	1					
Use of Ivermectin and Albendazole							
Yes	25 (60.98)	1.07	0.79-1.46	0.658			
No	189 (41.72)	1					

DISCUSSION

This study revealed a high prevalence of hypertension among individuals with hydrocele where the risk increases with increase in age. Also, being married and obesity were independently associated with hypertension.

The observed prevalence among PLFH was higher as compared to the community prevalence done on individuals without comorbidities [4,13,14]and yet few people are aware of it and even fewer access effective treatment. With the ongoing demographic transition in many parts of Sub-Saharan Africa, people are

changing from rural, manual work to urban lifestyles, hence the risk of hypertension increases. Objective: This study aimed at determining the prevalence, awareness and risk factors associated with hypertension in North West Tanzania. Design: A community-based cross-sectional study was conducted among adults in Magu District in 2013. Information on socio-demographic, economic and lifestyle characteristics, medical conditions, and risk factors for hypertension were collected according to the WHO Steps survey tool. Measurements of blood pressure, blood sugar, pulse rate, and anthropometry were taken. Multivariate logistic regression was used to estimate the odds ratios (OR. Likewise, the prevalence of the disease from our finding was lower as compared to hospital-based studies conducted in two different setting in Tanzania [1,15]. The difference in hypertension prevalence can be due to differences in sample sizes such that those studies which evolved large sample sizes were likely to have low prevalence compared to studies with small sample sizes [13,16]and yet few people are aware of it and even fewer access effective treatment. With the ongoing demographic transition in many parts of Sub-Saharan Africa, people are changing from rural, manual work to urban lifestyles, hence the risk of hypertension increases. Objective: This study aimed at determining the prevalence, awareness and risk factors associated with hypertension in North West Tanzania. Design: A community-based cross-sectional study was conducted among adults in Magu District in 2013. Information on socio-demographic, economic and lifestyle characteristics, medical conditions, and risk factors for hypertension were collected according to the WHO Steps survey tool. Measurements of blood pressure, blood sugar, pulse rate, and anthropometry were taken. Multivariate logistic regression was used to estimate the odds ratios (OR. Also, the differences in the prevalence can be due to the characteristics of study participants, including a number of predisposing factors to hypertension.

On risk factors, our study revealed that the age above 45 years was a predisposing risk of causing hypertension. This is similar to other studies done which showed the age of above 30 years to be associated with hypertension [1,6,17]. This underscores the importance of routine hypertension screening in older LF patients, especially those with additional risk factors like obesity. During the study, it was found that using ivermectin and albendazole which are the key preventive chemotherapy was not associated with hypertension which suggested minimal cardiovascular impacts of these medications. The observation is similar to another study which was done in Tanga region, which showed that hypertension was not among the adverse effects of the drugs.

In our study, being married was significantly associated with hypertension. The results are in line with a community based study done in Mwanza [13]and yet few people are aware of it and even fewer access effective treatment. With the ongoing demographic transition in many parts of Sub-Saharan Africa, people are changing from rural, manual work to urban lifestyles, hence the risk of hypertension increases. Objective: This study aimed at determining the prevalence, awareness and risk factors associated with hypertension in North West Tanzania. Design: A community-based cross-sectional study was conducted among adults in Magu District in 2013. Information on socio-demographic, economic and lifestyle characteristics, medical conditions, and risk factors for hypertension were collected according to the WHO Steps survey tool. Measurements of blood pressure, blood sugar, pulse rate, and anthropometry were taken. Multivariate logistic regression was used to estimate the odds ratios (OR. This could be explained by marital challenges among married couples that could lead to someone be stressed.

From our analysis it was observed that obesity was associated with hypertension, this was also reported in hospital based studies done in Dodoma and Morogoro [1,19]. Since it was a secondary data analysis incomplete data was one of the limitations, therefore we removed all data that missed values of importance such as missing diastolic and or systolic blood pressure values. Moreover, the study did not assess other known risk factors for hypertension for they were not collected.

CONCLUSION

The analysis revealed a very high prevalence of hypertension (≥140/90) among PLFH. High hypertension prevalence was observed among hydrocele patients. Key risk factors included age of ≥45 years, obesity and being married was independently associated with hypertension. It is recommended that the Ministry of Health (MoH) establish an integrated program for non-communicable diseases such as hypertension in managing patients with lymphatic filariasis hydrocele to address the dual burden effectively. We also recommend for the MoH to provide health education on hypertension screening, obesity-control and marriage counseling to LF patients.

Conflict of Interest: There is no conflict to any author who participated in this study.

ACKNOWLEDGMENTS

Authors recognize the contributions made by the Tanzania Neglected Tropical Disease Program (NTDCP) for approval of this analysis to be done on their collected data. Special thanks to USAID, Research Triangle Institute (RTI) for their financial support in funding the whole surgical camps conduction and other interventions related with eliminating Lymphatic Filariasis country wise. We appreciate the support from the supervisors from the NTDCP and Tanzania FELTP.

AUTHOR DETAILS

[1]Department of Microbiology and Immunology, Muhimbili University of Health and Allied Sciences
[2]Tanzania Field Epidemiology and Laboratory Training Program (TFELTP)
[3]Ministry of Health-Neglected Tropical Diseases Control Program (NTDCP)
[4]Research Triangle Institute (RTI) Tanzania

MUHTASARI
Ukubwa na Viashiria Hatarishi vya Shinikizo la Damu Miongoni mwa Wagonjwa Wenye Mabusha (ngiri maji) katika Mikoa ya Dar Es-Salaam na Pwani, Tanzania.

Sephord Ntibabara[1,2*], Evelyne Ngoli[1,2], Faraja Ollomyi[3], Roza Ernest[2], Peter Torokaa[1,2], Dorica Burengelo4, Stephen Mbwambo[3] Nsiade Lema[2], Clarer Jones[3], Faraja Lyamuya[3]

***Kwa Mawasiliano:** Sephord Ntibabara; email: sephordsaul@gmail.com

Utangulizi: Shinikizo la damu ni mojawapo ya sababu kuu za vifo vya mapema duniani kote. Nchini Tanzania, takriban asilimia 26 ya watu wote wenye umri wa miaka 30-49 wana tatizo la shinikizo la damu kwa mwaka 2020. Ugonjwa wa mabusha na matende (Lymphatic Filariasis, LF). Umeenea katika mikoa ya ukanda wa pwani ya Tanzania. Wagonjwa walio na LF ambao hupata mabusha wako katika hatari kubwa ya kupata shinikizo la damu kutokana na maisha yao ya kutofanya mazoezi. Ukubwa na viashiria hatarishi vinayohusiana na shinikizo la damu kati ya wagonjwa wa mabusha havijatambuliwa. Utafiti huu ulifanyika ili kubaini kiwango cha ukubwa wa shinikizo la damu na viashiria hatarishi vinayohusiana shinikizo la damu miongoni mwa watu walio na mabusha kutokana na LF katika mikoa ya Pwani na Dar-es Salaam.

Mbinu: Utafiti ulifanywa kwa wagonjwa wenye mabusha yatokayo na LF ambao walifanyiwa uchunguzi wa kabla ya upasuaji. Shinikizo la damu lilifafanuliwa kuwa na kiwango kilicho sawa ama juu ya kipimo cha ≥140 mmHg (systolic (BP)≥140 mmHg) na kiwango sawa ama juu ya kipomo cha ≥90 mmHg (BP diastolic ≥90 mmHg) vyote kwa pamoja. Takwimu zilichakatwa ili kubaini ukubwa wa tatizo na uhusiano wa visababishi hatarishi wa shinikizo la damu

Matokeo: Baada ya takwimu kuchambuliwa, miongoni mwa wagonjwa 494 waliokuwa na mabusha yatokanayo na LF, (n = 214) 43.3% (95% CI: 39.0- 47.8) walikuwa na shinikizo la damu. Wagonjwa wenye umri wa miaka 45 na zaidi walikuwa na hatari kubwa (uwiano wa ukubwa (APR) 2.3, 95% CI:1.2-4.5) ya kupata shinikizo la damu ukilinganisha na wagonjwa wenye umri wa chini ya miaka 45. Kuolewa kulihusishwa na shinikizo la damu ikilinganishwa na kuwa mseja (APR 1.8, 95% CI: 1.0-3.3). Wagonjwa wanene walikuwa na hatari iliyoongezeka (APR 1.48, 95% CI:1.0-2.2) ya kupata shinikizo la damu ikilinganishwa na wale walio na uwinao wa kawaida wa uzito na urefu.

Hitimisho: Kiwango cha juu cha shinikizo la damu kilionekana kati ya wagonjwa wa mabusha. Umri wa miaka sawa ama zaidi ya 45 (≥ miaka 45), unene wa kupita kiasi na kuolewa kulihusishwa na shinikizo la damu. Wizara ya Afya (MoH) inapaswa kuanzisha mpango jumuishi kati ya Magonjwa Yasiyo ya Kuambukiza kama vile shinikizo la damu katika kudhibiti wagonjwa wenye mabusha yatokanayo na LF.

Maneno Muhimu: Shinikizo la damu, Mabusha, Ugonjwa wa Mabusha na Matende

REFERENCES

1. Nyagori HE. Prevalence of Hypertensive Diseases and Associated Risk Factors above 30 Years Adult People Admitted in Morogoro Regional Refferal Hospital 2021, Tanzania. OALib. 2022;09(03):1–8.
2. Schutte AE, Srinivasapura Venkateshmurthy N, Mohan S, Prabhakaran D. Hypertension in Low- and Middle-Income Countries. Circ Res. 2021;128(7):808–26.
3. WHO. TANZANIA STEPS Survey-2012. 2012;(October 2012):2–3.
4. Khamis AG, Senkoro M, Mwanri AW, Kreppel K, Mfinanga SG, Bonfoh B, et al. Prevalence and determinants of hypertension among pastoralists in Monduli District, Arusha region in Tanzania: a cross-sectional study. Arch Public Heal. 2020 Dec 1;78(1).
5. Sheet HF. United Republic of Tanzania. Popul Policy Compend. 1980;1–6.
6. Muhihi AJ, Anaeli A, Mpembeni RNM, Sunguya BF, Leyna G, Kakoko D, et al. Prevalence , Awareness , Treatment , and Control of Hypertension among Young and Middle-Aged Adults : Results from a Community-Based Survey in Rural Tanzania. 2020;2020.
7. Fahme SA, Bloomfield GS, Peck R. Hypertension in HIV-infected adults: Novel pathophysiologic mechanisms. Hypertension. 2018 Jul;72(1):44–55.
8. Naha S, Gardner MJ, Khangura D, Kurukulasuriya LR, Sowers JR. Hypertension in Diabetes. Diabetes Kidney Dis Second Ed. 2021 Aug;263–91.
9. Mwimo J, Kimondo FC, Mboya IB. Prevalence of hypertension and associated factors among diabetic patients in Kilimanjaro region , northern Tanzania : A hospital-based cross-sectional study. Clin Epidemiol Glob Heal. 2023;23(June):101387.
10. Fimbo AM, Minzi OMS, Mmbando BP, Barry A, Nkayamba AF, Mwamwitwa KW, et al. Prevalence and correlates of lymphatic filariasis infection and its morbidity following mass ivermectin and albendazole administration in mkinga district, north-eastern tanzania. J Clin Med. 2020;9(5):1–17.
11. Hagiya H, Terasaka T, Kimura K, Satou A, Asano K, Waseda K, et al. Filarial chyluria as a rare cause of urinary retention. Intern Med. 2014;53(17):2001–5.
12. MHCDGEC. Standard treatment guidelines & national

essential medicines list, Tanzania mainland. 2019;453. Available from: https://apps.who.int/medicinedocs/documents/s23541en/s23541en.pdf
13. Mosha NR, Mahande M, Juma A, Mboya I, Peck R, Urassa M, et al. Prevalence, awareness and factors associated with hypertension in North West Tanzania. Glob Health Action. 2017;10(1).
14. Sungwa EE, Kibona SE, Dika HI, Laisser RM, Gemuhay HM, Kabalimu TK, et al. Prevalence and factors that are associated with elevated blood pressure among primary school children in Mwanza Region, Tanzania. Pan Afr Med J. 2020;37(283):283.
15. Pallangyo P. Hypertension in Urban Tanzania : A ticking time bomb. 2020;16(4):9465.
16. Galson SW, Staton CA, Karia F, Kilonzo K, Lunyera J, Patel UD, et al. Epidemiology of hypertension in Northern Tanzania : a community-based mixed-methods study. 2017;1–10.
17. Galson SW, Staton CA, Karia F, Kilonzo K, Lunyera J, Patel UD, et al. Epidemiology of hypertension in Northern Tanzania: A community-based mixed-methods study. BMJ Open. 2017;7(11):1–10.
18. Katatwire DD, Meremo A. High prevalence of uncontrolled hypertension among patients with early chronic kidney disease attending tertiary hospitals in Dodoma, Tanzania. 2022;1–19.

The Prevalence and associated factors of Hypertension among adults in Tanga region: A Cross-sectional community-based survey

Sephord Ntibabara[1,2*], Jonhas Masatu[1,2], David Osima[1,2], Thobias Bolen[1,2], Godbless Mfuru[1,2], Faraja Ng'ida[1,2], George Massawe[1,2], James Allan[1,2], Peter Torokaa[1,2], Rogath Kishimba[2], Loveness Urio[2], Nsiande Lema[2], Ally Hussein[2].

***Corresponding author:**Sephord Ntibabara; email: sesantiro@gmail.com

ABSTRACT

Introduction: Cardiovascular diseases (CVDs) are the leading cause of death among the four major Non-Communicable Diseases (NCDs) in Tanzania, accounting for 12% of all annual deaths. Hypertension is a major risk factor for CVDs and its prevalence in Tanzania was estimated to be 25% in 2020. However, recent surveys indicate that hypertension has rapidly increased to 30-35%. This study aimed at determining the prevalence and risk factors for hypertension, which are essential for reducing the burden of NCDs.

Methodology: A community based cross-sectional survey was conducted in Tanga City, Muheza and Mkinga districts of Tanga region. The standardized World Health Organization STEPwise approach to NCD risk factor surveillance (STEPS) survey questionnaire was adopted to collect demographic information, lifestyle-related factors, history of diagnosis, and family history of hypertension and medication use patterns. Descriptive analysis was conducted. A modified Poisson regression analysis was performed to assess the relationship of independent variables with hypertension (dependent).

Results: A total of 1818 participants were recruited in the survey. A hypertension prevalence of 38% (95% CI: 35.5-40.0%) was observed. Urban areas had a higher hypertension prevalence than rural areas (Adjusted Prevalence Ratio [APR]: 1.06, 95% CI: 1.02-1.11). The study showed that 66.5% of hypertensive individuals were unaware of their blood pressure status. Among known patients with hypertension, 80.5% were not taking daily medication. Independent risk factors associated with a higher hypertension prevalence include: being male (APR: 1.06, 95% CI: 1.02 – 1.10), older age (≥70 years) (APR: 1.41, 95% CI: 1.31-1.51) & being obese (APR: 1.20, 95% CI: 1.15-1.25). Exercise was associated with a lower prevalence of hypertension (APR: 0.96, 95% CI: 0.93-0.99).

Conclusions: The survey revealed a high prevalence of hypertension. The associated risk factors for hypertension observed were male, older age (≥70 years) and obesity. Regular hypertension screenings should be conducted in all areas, including rural settings coupled with health education that will provide information on the importance of taking anti-hypertensive medication and seeking proper healthcare. Exercise was the only preventive measure for hypertension, therefore, practicing physical activities is recommended for the general population as it have been proven to have a protective effect.

Key Words: Prevalence, Associated factors, Hypertension, Adults, Tanga Region

INTRODUCTION

Non-communicable diseases [NCDs] account for 41 million annual deaths worldwide equivalent to 74% of all fatalities [1,2]. Among all deaths, 77% are in low- and middle-income countries [2–4]. Cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes are the respective leading causes of NCDs, accounting for 80% of all premature deaths [3–7]. Recent studies have shown the age group of starting from 40 years and above is the most affected in developing countries [8]. NCDs account for 33% of all deaths in Tanzania each year, of which cardiovascular diseases accounting for 12%, followed by cancer 7%, chronic respiratory diseases 7%, and diabetes 2% [8,9]. NCDs are caused by a variety of risk factors, including behavioural risk factors such as tobacco use, an unhealthy diet, insufficient physical activity, and the harmful use of alcohol, hypertension, and obesity [4]. NCDs have major impacts on communities ranging from the nations, households, and individual economies by affecting younger age groups and cause longer disease durations, untimely deaths, and lost productivity [2,3]. The 2016-2020 national non communicable strategic plan for Tanzania revealed that CVDs contribute 12% deaths [10). In Tanzania, prevalence the of hypertension is increasing and was about 25% by 2020 [11]. Since hypertension is highly associated with the wide range of the CVDs, stringent and reliable surveys on its risk factors should be conducted to obtain relevant information for CVDs prevention and management planning.

MATERIAL AND METHODS

Study Design and Setting

A community-based cross-sectional survey was conducted to assess the prevalence and its associated risk factors in the Tanga region of Tanzania. The survey was conducted from January 16th to 20th, 2023, in the three selected district councils of the Tanga region, which were Muheza District Council, Mkinga District Council, and Tanga City Council.

Study Area

Tanga is one of the 31 regions of Tanzania. It is bordered to the north by Kenya and the Kilimanjaro region; to the south by the Pain and Morogoro regions; to the west by Manyara; and to the east by to the east by the Indian Ocean. The region covers an area of 26,667 km^2. According to the 2022 national census, the Tanzania National Bureau of Statistics reported a total human population of 2,615,597. The Tanga region has 11 districts; the study was carried out in Tanga City, Muheza, and Mkinga districts.

Sampling Procedures

The participants were selected using a multistage cluster sampling technique, where in the first stage, a random sample of three district councils was selected by simple random sampling out of ten district councils found in the Tanga region. In the second stage, ten wards were selected in every district council. In the third stage, three villages or streets were selected in each ward, and in the fourth stage, participants were sampled randomly in the community gathering area based on probability proportional to size (PPS), whereby we calculated the sampling fraction (n/N), where (n) represents the desired sample size and (N) stands for the total number of residences across all selected villages or streets. Then we applied this sampling fraction by multiplying it with the number of residences in each specific village or street in order to obtain the exact number of participants needed for the study. This method was done to ensure that each village or street contribution to the total number of participants is appropriately represented in the survey sample size. In every stage of sampling, we conducted simple random sampling using a random number generated by Epi Info 7. Participants were adult's aged 18 years and older, residents of the study district councils, who were able to sign the written informed consent. Self-reported pregnant women and bed-ridden and/or mentally ill individuals were excluded from our survey.

Variables and their Measurements

Variables and their measurement were: blood pressure was measured using a digital blood pressure machine. Blood pressure was measured on the left arm with the participant in a sitting-up position. The first reading was taken after at least 5 minutes of resting. Participants who had elevated blood pressure were advised, counseled, and referred to the nearby health facility. Anthropometric measurements included weight and height. Body weight (in kilograms) was measured using a weighing scale placed on the flat ground, with the participant wearing light clothing and without shoes. Participant's height (in meters) was measured in a standing position with heels perpendicular to the measuring stadiometer.

Hypertension was measured as systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥ 90 mmHg. Diastolic was termed "hypertensive" or "elevated blood pressure" as stipulated in Tanzania Standard Treatment Guidelines [14]. Hypertensive systolic was taken when systolic was ≥140mmHg or diastolic was ≥90mmHg; normotensive was taken when systolic was < 140mmHg and diastolic was < 90mmHg.

Body mass index (BMI) was measured by taking weight in kilograms divided by height in meters squared. Participants BMI were categorized into the following groups: underweight with a BMI <18.5; normal BMI 18.5-24.9; overweight MBI 25–30; and obese with a BMI >30. Smoking was defined as someone who, at the time of the survey, smoked cigarettes or any other tobacco products either daily or occasionally. Alcohol use was defined as someone who, at the time of the survey, used any alcoholic products either daily or occasionally. Daily: drink any alcoholic beverage every day. Occasionally, drink alcohol, but not every day. Anyone who never uses alcohol is termed an abstainer. Consumption of fruits was measured as the daily consumption of at least one fruit every day; occasionally, one consumes fruits but not daily. Never: Never consume fruits. Vegetable consumption was measured as the daily use of vegetables at least twice per day; occasionally, one consumes vegetables but not every day. Never: do not eat vegetables. Hypertension treatment was defined as taking blood pressure-lowering medications at the time of the survey among those aware of their hypertension status.

Data Collection and Analysis

Data was collected using the Kobo Collector Toolbox application loaded on Android tablets. The WHO STEPwise approach to NCD risk factor surveillance (STEPS) survey questionnaire was adopted, which included demographic information, information on associated risk factors for hypertension, and measurements of blood pressure and body mass index.

During analysis, the data was cleaned by using Microsoft Excel version 2013. Descriptive analysis was performed by using frequencies and proportions for categorical variables, the interquartile range (IQR), and the median for continuous variables. Chi square tests were conducted for binary and categorical variables to assess differences in distribution based on hypertension status. Modified Poisson regression analyses (bivariate and multivariate) were performed to assess the relationship between independent variables and hypertension (dependent). Variables with a p-value of < 0.20 in the bivariate analyses were included in the multivariate model using forward selection. Crude and adjusted prevalence ratios with their corresponding 95% confidence intervals (CI) were presented; a significance level of $p \leq 0.05$ was used.

Ethical Considerations

The approval letter was obtained from Ministry of Health and from the relevant local authorities. Informed consent was sought

and granted by all participants prior to be enrolled. Confidentiality was maintained by the research team as per ethical regulations governing research on human subjects, and no patient identifier were disclosed to an unauthorized person or the public.

RESULTS

Socio-demographic Characteristics of Study Participants

In this study, a total of 1818 adults aged 18 years and older were enrolled. The majority of study participants were from Tanga City Council 1097 (60.3%). The median age (IQR) was 41 (22.0%) years of whom 1231 (67.7%) were males. The majority 636 (35.0%) were aged between 30 and 44 years. Among all participants, more than half of them 1145 (63.0%) had at least primary school education with very few 165 (9.1%) who did not have any formal education. The majority, 1239 (68.2%), were married. On employment, 1369 (75.3%) were self-employed, with only 111 (6.1%) working for the government (Table 1).

Prevalence of Hypertension by Socio-Demographic Characteristics

The study's total prevalence of hypertension was 37.7% (686/1818). The study shows that there is a statistical increase in hypertension as age increases (p = 0.001). The prevalence of hypertension was high but not statistically significant among males 38.6% compared to females (p =0.277). Hypertension increases among primary education, secondary education, university/ college education, and non-formal education but the differences were not statistically significant at 434 (37.9%), 139 (34.7%), 41 (38.3%), and 72 (43.6%) respectively (p=0.25). Being widowed, or widower has a significantly increased the risk of hypertension (p< 0.001). The study showed that the prevalence of hypertension was higher among the unemployed 39.4%) although it was not statistically significant (p=0.709) (Table 1).

Distribution of Study Participants by Hypertension Risk Factors

The Body Mass Index (BMI) of participants shows that 555 (30.5%) were overweight and 361 (19.9%) were obese. On smoking habit, 316 (17.4%) reported having smoked either daily or occasionally, while 279 (15.4%) reported taking alcohol. The total number of participants who exercised was 844 (46.4%). In the study, 1728 people (95.1%) said they ate fruits, whereas 1729 people (95.1%) said they ate vegetables. In our study, 632 (34.8%) stated that one or more of their blood-related family members had a history of hypertension Table 1.

Table 1. Participants Characteristics and Prevalence of Hypertension in Tanga region, 2023 (N=1818)

Characteristic	Total (%)	Hypertensive n (%)	Normotensive n (%)	P value
Age groups				
18-29	415 (22.8)	95 (23.0)	320 (77.0)	<0.001
30-44	636 (35.0)	201(31.6)	435 (68.4)	
45-59	501 (27.6)	231(46.1)	270 (53.9)	
60-69	175 (9.6)	94 (53.7)	81 (46.3)	
≥70	91 (5.0)	65 (71.4)	26 (28.6)	
Gender				
Male	1231 (67.7)	475 (38.6)	756 (61.4)	0.277
Female	587 (32.3)	211 (36.0)	376 (64.1)	
Education				
Primary	1145 (63.0)	434 (37.9)	711 (62.1)	0.252
Secondary	401 (22.1)	139 (34.7)	262 (65.3)	
University/collage	107 (6.0)	41 (38.3)	66 (61.7)	
No-formal	165 (9.1)	72 (43.6)	93 (56.4)	
Marital status				
Married	1239 (68.2)	487 (39.3)	752 (60.7)	<0.001
Single	374 (20.6)	100 (26.7)	274 (73.3)	
Widow/widower	95 (5.2)	54 (56.8)	41 (43.2)	
Divorced	110 (6.1)	45 (40.9)	65 (59.1)	
Occupation				
Government employed	111 (6.1)	43 (38.74)	68 (61.26)	0.709
Private employed	163 (9.0)	55 (33.7)	108 (66.3)	
Self employed	1369 (75.3)	519 (37.9)	850 (62.1)	
Unpaid employed	175 (9.6)	69 (39.4)	106 (60.6)	
Residence				

Characteristic	Total (%)	Hypertensive n (%)	Normotensive n (%)	P value
Muheza	364 (20.0)	133 (36.5)	231 (63.5)	
Mkinga	357 (19.6)	120 (33.6)	237 (66.4)	0.122
Tanga City	1097 (60.3)	433 (37.7)	664 (60.5)	
BMI				
Underweight	56 (3.1)	13 (23.2)	43 (76.8)	
Normal	846 (46.5)	237 (28.0)	609 (72.0)	
Overweight	555 (30.5)	236 (43.1)	316 (56.9)	
Obese	361 (19.9)	197 (54.6)	164 (45.4)	<0.001
Smoking				
Yes	316 (17.4)	106 (33.5)	210 (66.5)	
No	1502 (82.6)	580 (38.6)	922 (61.4)	0.091
Alcohol				
Yes	279 (15.4)	102 (36.6)	177 (63.4)	
No	1539 (84.7)	584 (37.9)	955 (62.1)	0.660
Exercise				
Yes	844 (46.4)	298 (35.3)	546 (64.7)	
No	974 (53.6)	388 (39.8)	586 (60.2)	0.047
Eating Fruits				
Yes	1728 (95.1)	657 (38.0)	1071 (62.0)	
No	90 (5.0)	29 (32.2)	61 (67.8)	0.269
Eating Vegetables				
Yes	1729 (95.1)	650 (37.6)	1079 (62.4)	
No	89 (4.9)	36 (40.4)	53 (59.6)	0.588
Family History of HTN				
Yes	632 (34.8)	266 (42.1)	366 (57.9)	
No	1186 (65.2)	420 (35.4)	766 (64.6)	0.005

Key: IQR = Interquartile range

Patterns of Hypertension and Anti-hypertensive Medication Use among Participants.

We found that out of 686 (37.7%) participants who were diagnosed with hypertension, only 236 (34.4%) were previously diagnosed and were aware that they had hypertension. This shows 450 (65.6%) of the hypertensive individuals did not know if they had hypertension. Moreover, among the known individuals who are hypertensive, only 67 (28.4%) were on medication. On assessing if those who are on medication are adhering to the instruction, we found that 46 (68.7%) responded to have been using anti-hypertensive medication for the past two weeks (Figure 2).

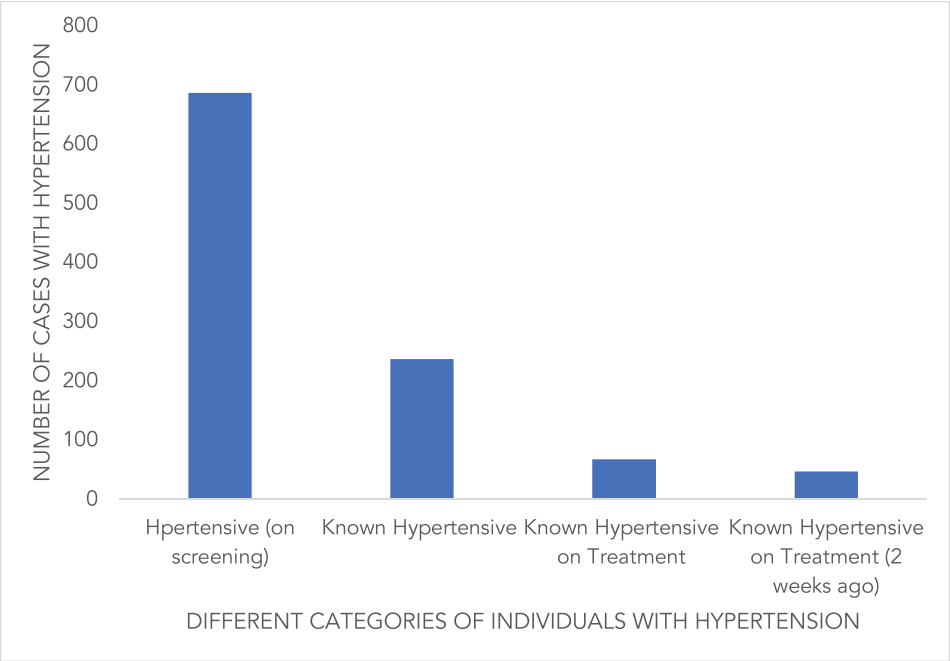

Figure 1: Anti-hypertensive medication uses among Tanga hypertension survey participants, January 2023

Risk Factors Associated with Hypertension

The risk of developing hypertension increases significantly with age 45-59 years (APR 1.16, 95% CI: 1.10–1.23), 60–69 years (APR 1.21, 95% CI: 1.13–1.29), and over 70 years (APR 1.41, 95% CI: 1.31-1.51). The study revealed that being male was associated with a higher risk of being hypertensive as compared with being female (APR: 1.06, 95% CI: 1.02–1.10). Also, living in an urban area (Tanga City) was associated with a higher risk of being hypertensive as compared to living in a rural area (Mkinga) (APR 1.06, 95% CI: 1.02–1.11). Moreover, the study revealed that being overweight or obese was associated with a higher risk for hypertension (APR 1.10, 95% CI: 1.06–1.14) and (APR 1.20, 95% CI: 1.15–1.25) respectively. Doing physical exercise has a protective effect on hypertension (APR: 0.96, 95% CI: 0.93–0.99) (Table 2).

Table 2. Modified Poisson Regression Analysis of Hypertension among the survey participants in Tanga region in 2023 (N=1818)

Characteristic	Prevalece of HTN (n/N) n (%)	Crude Prevalence Ratio (95% CI)	Adjusted Prevalence Ratio (95% CI)
Age groups			
18-29	95 (22.9)	Ref	ref
30-44	201(31.6)	1.06 (1.02 – 1.11)	1.04 (0.99 -1.10)
45-59	231(46.1)	1.19 (1.14 – 1.24)	1.16 (1.10 – 1.23)
60-69	94 (53.7)	1.21 (1.14 – 1.28)	1.21 (1.13 – 1.29)
≥70	65 (71.4)	1.40 (1.32 – 1.49)	1.41 (1.31 – 1.51)
Gender			
Male	475 (38.6)	1.02 (0.98 – 1.05)	1.06 (1.02 – 1.10)
Female	211 (36.0)	ref	ref
Education			
Primary	434 (37.9)	0.99 (0.93 – 1.06)	0.99 (0.92 – 1.06)
Secondary	139 (34.7)	0.97 (0.90 – 1.05)	0.99 (0.92 – 1.07)

Characteristic	Prevalece of HTN (n/N) n (%)	Crude Prevalence Ratio (95% CI)	Adjusted Prevalence Ratio (95% CI)
University/collage	41 (38.3)	ref	ref
No-formal	72 (43.6)	1.03 (0.95 – 1.13)	0.98 (0.89 - 1.07)
Marital status			
Married	487 (39.3)	0.98 (0.92 – 1.06)	0.98 (0.92 – 1.05)
Single	100 (26.7)	0.89 (0.83 – 0.97)	1.01 (0.93 – 1.10)
Widow/widower	54 (56.8)	1.11 (1.01 – 1.21)	1.06 (0.97 – 1.17)
Divorced	45 (40.9)	ref	ref
Occupation			
Government employed	43 (38.7)	ref	ref
Private employed	55 (33.7)	0.96 (0.88 – 1.05)	1.04 (0.95 – 1.13)
Self employed	519 (37.9)	0.99 (0.92 – 1.06)	1.06 (0.98 - 1.14)
Unpaid employed	69 (39.4)	1.00 (0.92 – 1.09)	1.06 (0.97 – 1.16)
Residence			
Muheza	133 (36.5)	1.02 (0.97 – 1.07)	0.99 (0.94 – 1.04)
Mkinga	120 (33.6)	ref	ref
Tanga cc	433 (37.7)	1.04 (1.00 – 1.08)	1.06 (1.02 – 1.11)
BMI			
Underweight	13 (23.64)	0.97 (0.88 – 1.06)	0.95 (0.87 – 1.03)
Normal	231 (27.60)	ref	ref
Overweight	242 (43.06)	1.12 (1.08 – 1.16)	1.10 (1.06 – 1.14)
Obese	200 (54.95)	1.21 (1.16 – 1.26)	1.20 (1.15 – 1.25)
Smoking			
Yes	106 (33.54)	0.96 (0.92 – 1.01)	0.95 (0.91 – 1.00)
No	580 (38.62)	ref	ref
Alcohol			
Yes	102 (36.56)	0.98 (0.94 – 1.03)	1.00 (0.96- 1.05)
No	584 (37.95)	ref	ref
Exercise			
Yes	298 (35.31)	0.967 (0.93 – 0.99)	0.96 (0.93 – 0.99)
No	388 (39.84)	ref	ref
Eating fruits			
Yes	657 (38.02)	1.04 (0.96 – 1.12)	1.07 (0.99 – 1.16)
No	29 (32.22)	ref	ref
Eating vegetables			
Yes	650 (37.59)	0.97 (0.90 – 1.05)	0.94 (0.87 – 1.02)
No	36 (40.45)	ref	ref
Family history			
Yes	266 (42.09)	1.04 (1.01 – 1.08)	1.03 (0.99 – 1.06)
No	420 (35.41)	ref	ref

DISCUSSION

We found a high prevalence of hypertension among adults in Tanga. More than two thirds of the diagnosed patients were unaware of their hypertension status. Majority of the known patients with hypertension were not taking daily medication. Risk factors associated with a higher hypertension prevalence include: being male, old age, being obese and living in an urban area. Exercise was associated with a lower prevalence of hypertension.

The prevalence of hypertension in this survey was found to be 38%, which differs from that stipulated by the Tanzania steps survey of 2012 whereby the prevalence of hypertension was found to be 26% [1]. The prevalence was also higher than in other studies that were conducted in Arusha and Kisarawe by David Plot on 2018 [2]. This indicates that the prevalence of hypertension is rising in Tanzania and it likelihood in both rural and urban settings. This Survey`s hypertension prevalence was found to be higher in men than females, our findings were similar to other studies conducted in Nairobi [3, 4]. The difference in prevalence among males and females might be explained by the higher number of male participants who were recruited in this survey, participants were found and enrolled from public areas, and according to Tanga residents' culture men are more involved in economic activities as compared to females. The risk of developing hypertension among people residing in the urban area in this survey (Tanga City) was found to be higher compared to those who are living in rural areas (Mkinga District). The findings in this survey were similar to other Surveys done by Stanifer et al in Northern Tanzania who reported a prevalence of raised blood pressure of 30.6% and 19.1% for urban and rural settings respectively [15,16] and yet few people are aware of it and even fewer access effective treatment. With the ongoing demographic transition in many parts of Sub-Saharan Africa, people are changing from rural, manual work to urban lifestyles, hence the risk of hypertension increases. Objective: This study aimed at determining the prevalence, awareness and risk factors associated with hypertension in North West Tanzania. Design: A community-based cross-sectional study was conducted among adults in Magu District in 2013. Information on socio-demographic, economic and lifestyle characteristics, medical conditions, and risk factors for hypertension were collected according to the WHO Steps survey tool. Measurements of blood pressure, blood sugar, pulse rate, and anthropometry were taken. Multivariate logistic regression was used to estimate the odds ratios (OR).

It was found in our Survey that alcohol use and cigarette smoking, were not associated with an increased likelihood of hypertension, however, these findings were contrary to other studies conducted in Africa which show an association between alcohol use, cigarette use, and hypertension [15,17] and yet few people are aware of it and even fewer access effective treatment. With the ongoing demographic transition in many parts of Sub-Saharan Africa, people are changing from rural, manual work to urban lifestyles, hence the risk of hypertension increases. Objective: This study aimed at determining the prevalence, awareness and risk factors associated with hypertension in North West Tanzania. Design: A community-based cross-sectional study was conducted among adults in Magu District in 2013. Information on socio-demographic, economic and lifestyle characteristics, medical conditions, and risk factors for hypertension were collected according to the WHO Steps survey tool. Measurements of blood pressure, blood sugar, pulse rate, and anthropometry were taken. Multivariate logistic regression was used to estimate the odds ratios (OR). This could be explained by type of participants we enrolled whereby majority of them were below age of 45 years. Age was found to be an important risk factor for hypertension. As the age advances the likelihood of hypertension increases even higher in the age group above 70 years. However, it was found the age group above 45 years was likely to be hypertensive these findings were similar to other studies that were conducted in Ethiopia and Tanzania showed an increase in the likelihood of hypertension as someone aged [15,17,18] livelihoods or mobility. Unfortunately, the prevalence of hypertension and the risk factors particularly affecting rural and pastoral populations are not fully understood, making intervention efforts challenging. The aim of this study was to determine the prevalence of hypertension and identify the risk factors among adults living in Monduli district in Tanzania. The findings will be useful for the provision of tailored interventions focused on community-specific nutritional and behavioral practices. Methods: We conducted a community based cross-sectional study involving a sample of 510 adults aged above 18 years selected using a multistage cluster sampling in the Monduli district of Arusha region, Tanzania. Data were collected by using interviewer-administered questionnaires containing socio-demographic, physical activity, smoking and alcohol consumption. Anthropometry, systolic (SBP. The main possibility for this observed phenomenon can be explained by physiological changes which happen as someone ages resulting in increasing in the stiffness of blood vessels [16] diabetes, and hypertension play a disproportionate role in the growing public health challenge posed by noncommunicable diseases (NCDs).

We found a significant association between BMI and risk of hypertension where 43.1% with overweight and 55.0% of the obese were found with high levels of blood pressure (hypertension), this survey concurs with [8] surveys conducted in urban Varanasi in India [10]. This survey indicates that physical activity (exercise) has a protective effect against high blood pressure levels (hypertension). Participants who engaged in physical activities had lower risk of hypertension compared to those who did not engage in physical activities. WHO recommend that an adult should achieve at least 600 metabolic equivalents per week, equivalent to 150 minutes of physical activities. It has been reported that people living in urban areas are more likely to be exposed to sedentary activities for most time of the day [19].

The strength of this study was the large sample size used and repeated blood pressure measurement to check the validity of high blood pressure. The study was conducted in both urban

and rural settings. A limitation of the study was the design used i.e cross sectional, that hinders assessment of causality between hypertension and the risk factors. We did not reach all districts of the region so the results might not be generalizable to all urban and rural areas of Tanga region. We also did not assess information on caffeine consumption, literature shows that caffeine consumption is associated with blood pressure.

CONCLUSIONS

The survey revealed a high prevalence of hypertension. The associated risk factors for hypertension observed were male, older age (≥70 years) and obesity. Regular hypertension screenings should be conducted in all areas, including rural settings coupled with health education that will provide information on the importance of taking anti-hypertensive medication and seeking proper healthcare. Exercise was the only preventive measure for hypertension, therefore, practicing physical activities is recommended for the general population as it have been proven to have a protective effect.

ACKNOWLEDGMENTS

We are very grateful to the Muhimbili University of Health and Allied Sciences, Ministry of Health, President's Office, Regional Administration and Local Government, Tanzania Field Epidemiology and Laboratory Training program for technical support to this study. This work has been supported by the United States President's Emergency Plan for Aids Relief (PEPFAR) through the Centre of Excellence in Health Monitoring and Evaluation, Mzumbe University under the Centre for Disease Control and Prevention (CDC), Project Cooperative Agreement No: "NU2GGH002292". The funder has no any competing interest with the study findings

AUTHOR DETAILS

[1]Muhimbili University of Health and Allied Sciences, School of Public Health and Social Sciences, Dar es Salaam, Tanzania.
[2]Tanzania Field Epidemiology and Laboratory Training Program, Dar es Salaam, Tanzania.

MUHTASARI

Ukubwa na Visababishi Vinavyohusiana na Shinikizo la Damu Miongoni mwa Watu Wazima katika Mkoa wa Tanga: Utafiti katika Ngazi ya Jamii

Sephord Ntibabara[1,2*], Jonhas Masatu[1,2], David Osima[1,2], Thobias Bolen[1,2], Godbless Mfuru[1,2], Faraja Ng'ida[1,2], George Massawe[1,2], James Allan[1,2], Peter Torokaa[1,2], Rogath Kishimba[2], Loveness Urio[2], Nsiande Lema[2], Ally Hussein[2].

***Kwa Mawasiliano:** Sephord Ntibabara; email: sesantiro@gmail.com

Utangulizi: Magonjwa ya moyo (CVDs) ndiyo yanayoongoza kwa kusababisha vifo kati ya magonjwa manne makubwa yasiyo ya kuambukiza (NCDs) nchini Tanzania, yakichangia asilimia 12 ya vifo vyote kila mwaka. Shinikizo la damu ni kisababishi kubwa cha hatari kwa magonjwa ya moyo CVDs na ukubwa wake nchini Tanzania unakadiriwa kuwa asilimia 25 mwaka 2020. Hata hivyo, tafiti za hivi karibuni zinaonyesha kuwa shinikizo la damu limeongezeka kwa kasi hadi kufikia asilimia 30-35. Utafiti huu ulilenga kubaini ukubwa wa tatizo na visababishi vya hatari vinavyohusiana na shinikizo la damu, taarifa ambayo ni muhimu kwa kupunguza tatizo la magonjwa yasiyo ya kuambukiza.

Mbinu: Utafiti ulifanyika mkoani Tanga, halmashauri za Muheza, Mkinga na Tanga jiji. Utafiti huu ulitumia dodoso la uchunguzi wa mambo hatarishi ya NCD (STEPS) la Shirika la Afya Duniani STEPwise. Dososo lilikusanya taarifa za kidemografia, mambo yanayohusiana na mtindo wa maisha, taarifa za kihistoria za uchunguzi wa kiafya, historia ya familia juu ta tatizo la shinikizo la damu na namna ya utumiaji wa dawa. Uchambuzi takwimu ulifanywa ili kubaini ukubwa wa tatizo na visababishi vinavyohusiana la shinikizo la damu.

Matokeo: Jumla ya washiriki 1818 walihusika katika utafiti huu. Ukubwa wa shinikizo la damu ulikuwa asilimia 38 (95% CI: 35.5-40.0%). Maeneo ya mijini yalikuwa na kiwango kikubwa cha shinikizo la damu kuliko maeneo ya vijijini kwa uwinao wa 1.06 (Adjusted Prevalence Ratio [APR]: 1.06, 95% CI: 1.02-1.11). Utafiti ulionyesha kuwa asilimiia 66.5 ya watu waliogundulika kuwa na shinikizo la damu hawakujua hali yao ya shinikizo la damu. Miongoni mwa wagonjwa wanaojulikana kuwa wana tatizo la shinikizo la damu, asilimia 80.5 hawakuwa wanatumia dawa kila siku. Visababishi hatari vinavyohusiana na kiwango cha juu cha tatizo la shinikizo la damu ni pamoja na: kuwa mwanamume uwiano wa 1.06 (APR: 1.06, 95% CI: 1.02 - 1.10), umri mkubwa (≥miaka 70) uwiano wa 1.41 (APR: 1.41, 95% CI: 1.31-1.51) na kuwa mnene kupita kiasi uwiano wa 1.20 (APR, 1.20, 95% CI:1.5-1.2%). Mazoezi yalihusishwa na kiwango cha chini cha ukubwa wa shinikizo la damu kwa uwiano wa 0.96 (APR: 0.96, 95% CI:

0.93-0.99).

Hitimisho: Utafiti umeonyesha kiwango cha juu cha ugonjwa wa shinikizo la damu. Visabaishi hatari vinavyohusiana na shinikizo la damu vilibainika kuwa ni kuwa wanaume, wazee (≥miaka 70) na unene kupita kiasi. Vilevile utafiti ulionesha kuwa watu wengi hawakujua hali yao ya kiafya kuhusu kuwa na shinikizo la juu la damu. Uchunguzi wa mara kwa mara wa shinikizo la damu unapaswa kufanywa katika maeneo yote, ikiwa ni pamoja na mazingira ya vijijini pamoja na utoaji wa elimu ya afya ambayo itatoa taarifa juu ya umuhimu wa kutumia dawa za kupunguza shinikizo la damu na kutafuta huduma za afya zinazofaa. Mazoezi ndiyo kilikuwa kisababishi pekee kilichohusika na kuzuia uwepo wa shinikizo la damu, kwa hivyo, kufanya mazoezi ya mwili kunapendekezwa kwa watu kwa ujumla kwani imethibitishwa kuwa ni kinga.

Maneno Muhimu: Ukubwa, Visababishi, Shinikizo la Damu, Watu Wazima, Mkoa wa Tanga

REFERENCES

1. Global Burden of Disease Collaborative Network, Global Burden of Disease Study 2019 (GBD 2019) Results (2020, Institute for Health Metrics and Evaluation – IHME) https://vizhub.healthdata.org/gbd-results/ [Internet]. [cited 2023 Jan 8]. Available from: https://www.google.com/search?q=WHO+ncds+burden&oq=WHO+ncds+burden&aqs=chrome..69i57.14642j0j15&sourceid=chrome&ie=UTF-8
2. Negin J, Cumming R, de Ramirez SS, Abimbola S, Sachs SE. Risk factors for non-communicable diseases among older adults in rural Africa. Trop Med Int Health [Internet]. 2011 May [cited 2023 Jan 9];16(5):640–6. Available from: https://pubmed.ncbi.nlm.nih.gov/21320244/
3. WHO; WEF; Harvard School of Public Health. From Burden to " Best Buys ": Reducing the Economic Impact of Non-Communicable Diseases in Low- and Middle-Income Countries. World Econ Forum. 2011;1–12.
4. Wu F, Guo Y, Chatterji S, Zheng Y, Naidoo N, Jiang Y, et al. Common risk factors for chronic non-communicable diseases among older adults in China, Ghana, Mexico, India, Russia and South Africa: the study on global AGEing and adult health (SAGE) wave 1. BMC Public Health [Internet]. 2015 [cited 2023 Jan 9];15(1). Available from: https://pubmed.ncbi.nlm.nih.gov/25885218/
5. 5. Bhalia S, Pallangyo P, Dalidali A, Salum S, Kawajika R, Kajuna E, et al. Burden and correlates of atrial fibrillation among hypertensive patients attending a tertiary hospital in Tanzania. BMC Cardiovasc Disord. 2020 May 19;20(1).
6. 6. Wamba AA, Takah NF, Johnman C. The impact of interventions for the primary prevention of hypertension in Sub-Saharan Africa: A systematic review and meta-analysis. PLoS One. 2019;14(7):1–16.
7. Wu F, Guo Y, Chatterji S, Zheng Y, Naidoo N, Jiang Y, et al. Common risk factors for chronic non-communicable diseases among older adults in china, ghana, mexico, india, russia and south africa: The study on global AGEing and adult health (SAGE) wave 1. BMC Public Health. 2015;15(1).
8. Kavishe B, Biraro S, Baisley K, Vanobberghen F, Kapiga S, Munderi P, et al. High prevalence of hypertension and of risk factors for non-communicable diseases (NCDs): A population based cross-sectional survey of NCDS and HIV infection in Northwestern Tanzania and Southern Uganda. BMC Med [Internet]. 2015;13(1):1–21. Available from: http://dx.doi.org/10.1186/s12916-015-0357-9
9. Rweyemamu SJ, Nchimbi H, Ramaiya K, Mayala HA. Prevalence of Cardiovascular Disease and Risk Factors Among Residents of Tanga City. 2020;(4).
10. Tanzania NCD Stategic Plan 2016 - 2020 | World Diabetes Foundation [Internet]. [cited 2023 Jan 10]. Available from: https://www.worlddiabetesfoundation.org/files/tanzania-ncd-stategic-plan-2016-2020
11. Khamis AG, Senkoro M, Mwanri AW, Kreppel K, Mfinanga SG, Bonfoh B, et al. Prevalence and determinants of hypertension among pastoralists in Monduli District, Arusha region in Tanzania: a cross-sectional study. Arch Public Heal [Internet]. 2020 Dec 1 [cited 2023 Jan 9];78(1):1–12. Available from: https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-020-00485-0
12. Habib SH, Saha S. Burden of non-communicable disease: Global overview. Diabetes Metab Syndr Clin Res Rev. 2010;4(1):41–7.
13. Tanzania MoHCDGEC. Strategic and action plan for the Prevention and control of non communicable diseases in Tanzania 2016 - 2020. 2016;128. Available from: https://www.worlddiabetesfoundation.org/sites/default/files/NCD Stategic Plan 2016 - 2020.pdf - Google Search [Internet]. [cited 2023 Feb 2]. AHgAgAEAiAEAkgEAmAEAoAECoAEB&sclient=gws-wiz
14. MHCDGEC. Standard treatment guidelines & national essential medicines list, Tanzania mainland. 2019;453. Available from: https://apps.who.int/medicinedocs/documents/s23541en/s23541en.pdf
15. Mosha NR, Mahande M, Juma A, Mboya I, Peck R, Urassa M, et al. Prevalence, awareness and factors associated with hypertension in North West Tanzania. Glob Health Action. 2017;10(1).
16. Ploth DW, Mbwambo JK, Fonner VA, Horowitz B, Zager P, Schrader R, et al. Prevalence of CKD, Diabetes, and Hypertension in Rural Tanzania. Kidney Int Reports. 2018 Jul;3(4):905–15.
17. Yadecha B, Tekle F, Fetensa G, Habte A, Zeleke B. Prevalence of hypertension and its associated factors among gimbi town residents, ethiopia: A community-based cross-sectional study. Integr Blood Press Control. 2020;13:171–9.
18. Khamis AG, Senkoro M, Mwanri AW, Kreppel K, Mfinanga SG, Bonfoh B, et al. Prevalence and determinants of hypertension among pastoralists in Monduli District, Arusha region in Tanzania: a cross-sectional study. Arch Public Heal. 2020 Dec 1;78(1).
19. Nyagori HE. Prevalence of Hypertensive Diseases and Associated Risk Factors above 30 Years Adult People Admitted in Morogoro Regional Refferal Hospital 2021, Tanzania. OALib. 2022;09(03):1–8. - Google Search [Internet]. [cited 2023 Feb 2].

Ear Conditions and Hearing Loss in Mbeya City: A descriptive report of World Hearing Day 2024 in Tanzania

Msafiri Kabulwa [1*], Edwin Liyombo[2], Fatuma Kibao[3], Benedict Ngunyale[4], Omary Mhochi[4], Raphael Gabriel[4], Zera Kayanda[4], Constantine Kanick[5], Libason Hosea[6], Elias Marandu[7], Maxprince Salu[8], Mwinyikondo Amir[1], Cosmas Mnyanyi[9] Aveline Kahinga [10]

***Corresponding Author:** Msafiri Kabulwa; email:kabulwan@gmail.com

ABSTRACT

Introduction: Third March every year marks the commemoration of World hearing day since it was designated in 2007. Globally, the first commemoration was done in 2015 while in Tanzania started in 2020 and it was hosted at Muhimbili National hospital, an event that was jointly organized by Tanzania Ear Nose and Throat (ENT) Society, Ministry of Health, UN Agencies and other stakeholders

Methods: The 2024 event took place in Mbeya City at Mbeya Zonal Referral Hospital. The official permission to conduct the event in Mbeya City was obtained from respective government and health regional administrations. Activities conducted during the event were raising awareness conducted through radio and television, health education in visited primary schools as well as hospital grounds. Additionally, screening was done in sampled primary schools and to the public at the Mbeya Zonal referral hospital where screening booths were instituted. The services were provided by ENT Specialists, audiologists, medical officers, nurses and school teachers with specials education from Patandi Teachers college.

Results: A total of 4476 pupils from primary schools were given health education in their respective classrooms and assembly grounds and 2114 were screened on ear and hearing conditions. At hospital grounds a total of 553 individuals aged 6-15 years old constituted 37.8% while those aged 16 years old or more were constituted 62.8% were examined. Of the 2114 pupils screened, 313 (14.8%) and 85 (4.0%) had cerumen impaction and hearing loss respectively. Of 553 individuals examined at the hospital grounds, 149 (26.9%) had cerumen impaction and 167 out of 243 (30.2%) who had pure tone audiometry tests done had hearing loss. Suppurative otits media was diagnosed in 4 (0.2%) for those screened in schools while it was 36 (6.5%) for those screened at hospital grounds.

Conclusions: Cerumen impaction was the most prevalent ear condition followed by hearing loss. Therefore, introducing outreach screening services or strengthening delivery of ear and hearing care especially in primary health care facilities might contribute to early identification and treatment of ear conditions across all age groups. Also, there is a need to continue providing health education that will elicit the early health seeking behaviors for ear services. The Ministry of Health in collaboration with other stakeholders will continue making follow up to ensure that all pupils found to have ear problems get necessary care

Key Words: Cerumen impaction, hearing loss, World hearing day, ear conditions, otitis media

INTRODUCTION

Third March each year was designated as World hearing day at the first International Conference on Prevention and rehabilitation of hearing impairment in 2007[1]; however, the first commemoration was done in 2015. The aim of this day is to raise awareness and promote ear and hearing care across the world. Tanzania started commemorating this day in 2020 which was held in Dar es Salaam, an event jointly organized by Tanzania ENT Society, Ministry of Health (MoH), United Nations (UN) Agencies and other stakeholders. Since then, it has been commemorated yearly.

In 2024, the commemoration took place in the Mbeya region and had a theme of 'Changing mindsets: Let's make ear and hearing care a reality for all'. This theme focused on overcoming challenges posed by family members, friends, relatives as well as society misperceptions and stigmatizing mindsets to persons with ear and hearing loss problems. Such mindsets in society range from social, cultural, economic, and developmental aspects of life [1].

Among the socio-cultural negative impacts are self-isolation which leads to avoidance of social gatherings and developmental under-productivity due to unemployment. The event in Mbeya was planned to be achieved through raising awareness and information-sharing activities, targeting both the public and health care providers [2]. The activities implemented in this event were tailored to meet the set objectives by the World Health Organization (WHO). The objectives included: counter the common misperceptions related to ear and hearing problems in communities and provision of accurate evidence-based information through various vehicles so as to change

public perceptions of ear and hearing problems. This year commemoration was wake up call to all WHO member states and civil societies to be engaged in addressing misperceptions and stigmatizing mindsets related to hearing loss as a crucial step towards equitable access to ear and hearing care.

World Hearing Day in Mbeya City

Official permission to conduct the event in Mbeya City was obtained from government and health administrations. These included the President's Office-Regional Administration and Local Government, Mbeya Regional Administration, Mbeya City Offices and Mbeya Zonal Referral Hospital. Mbeya City has two divisions made up with 36 administrative wards. By February 2024, there were 263,680 school aged pupils enrolled in 105 primary schools (both public and private). Out of these primary schools, four are special and inclusive schools (include teaching pupils with different disabilities) which are Itiji, Mwenge, Kilimo and Nsalaga having a total of 442 pupils. From a total of 105 schools, eleven primary schools were randomly selected from seven administrative wards. Information about the commemoration was transmitted to the community through local leaders, district/community radio stations and advertisements in local streets using public service announcements.

Planned activities for the World Hearing Day 2024, took into account the findings by the WHO in 2013 which noted that "millions of people in the world have hearing loss that can be treated or prevented"; and that "awareness is the key to prevention [3]. The activities conducted included communicating health messages through information, education and communication (IEC), which is a common health communication approach in Sub Saharan Africa (SSA) countries [4] followed, by interpersonal communication. IEC was used to address the issue of misperceptions and mindsets about ear care and hearing loss. It is one of the approaches which has been extensively used in other health communication in SSA countries during COVID-19 and Ebola outbreaks [5, 6]. The primary communication channels used for conveying health messages were mass media, radio, television (TV) and social media platforms as recommended by Stead and colleagues [7]. The delivered messages targeted individuals, small groups and mass audiences [4].

In addition to health communication, screening on hearing was conducted in eleven primary schools in Mbeya City as well as to the general population who had an opportunity to visit the commemoration grounds at Mbeya Zonal Referral Hospital. These activities were conducted from 26th February to 3rd March, 2024. Health professionals from both public and private health facilities from various regions and different levels of hospitals (National, Zonal, regional and council hospitals) were engaged in the provision of services accordingly. This included 23 ENT Specialists, 6 Medical Officers and 9 audiologists. Other personnel included were teachers with special education (Audiology) from Patandi Teachers College Arusha.

Health Education through Radio and Television

Radio and TV were used for raising awareness on various health topics on ear and hearing services including myths related to ear care and hearing loss. Live sessions gave opportunity for listeners to ask questions and health professionals responded/provided clarification. The distribution of Radio/TV stations visited is shown in the table 1.

Table 1: Distribution of Radio/ TV Stations visited

Name of Radio /TV	Date and Time	Region
Hope Channel TV/AWR	20th February, 2024 7:00am-8:00am	Dar es Salaam
Furaha 96.7MHz	22nd February, 2024 8:00am-9:00am	Iringa
Shamba FM 88.5MHz	22nd February, 2024 3:00pm-6:00pm	Iringa
Jogoo FM 93.0MHZ	22nd February, 2024 6:45pm-7:30pm	Ruvuma
Selous FM 95.7MHz	23rd February,2024 8:25am-9:10am	Ruvuma
Mbeya yetu Blog TV	26th February (Recorded and later aired)	Mbeya
Baraka FM 107.7MHz	27th February, 2024 8:00am-9:00am	Mbeya
Radio One/ITV	28th February, 2024 3.00pm-4:00pm	Dar es Salaam
Highland FM 92.6 MHz	28th February, 2024 8:00am-9:00am	Mbeya
Dream FM 91.3 MHz	29th February, 2024 8:00am-9:00am	Mbeya
Access FM 100.9MHZ	1st March, 2024 8:00am-9:00am	Mbeya

Health communication, ear examination and screening in primary schools

The age of nursery to standard three pupils ranged from 3-8 years old while their counterparts from standard 4-7 were 9-15 years old. A total of 4476 pupils from nursery to standard seven were given health education in their respective classrooms and assembly grounds, afterwards students from nursery to standard three pupils were all screened for hearing loss. Pupils from standard four to seven were asked those who had experienced any ear complaint or had some challenges in hearing to participate in the ear examination and screening program. The number of pupils screened and ear condition from each primary school is shown in the table 2.

Table 2: Number of pupils screened ear condition from each primary school from 26th February to 3rd March, 2024

Name of School	Number of pupils screened	Number of pupils with diagnosed to have ear condition	Percentage of pupils diagnosed to have ear condition (%)
Ruanda Nzove	33	12	36.4
Azimio	165	73	44.2
Umoja	396	82	20.7
Kagera	274	22	8.0
Sisimba	38	17	44.7
Uhuru	214	51	23.8
Mapambano	64	38	59.4
Benjamin Mkapa	488	56	11.5
Itiji	156	35	22.4
Nero	85	30	35.3
Mwakibete	201	28	13.9
Total	2114	444	21.0

Among 2114 pupils who had an opportunity to be screened about their hearing status, 444 (21.0%) pupils were found to have ear conditions that needs attention of health care provider, thus were referred to hospital for further assessment and care.

Table 3: Distribution of pupils diagnosed to have ear condition (N=2114)

Diagnosis	Number	Percentage
Cerumen impaction	313	14.8
Hearing loss	85	4.0
Otitis externa	17	0.8
Otitis media	13	0.6
Foreign body in ear	12	0.6
Suppurative otitis media	4	0.2

As presented in table 3, of the total pupils screened, cerumen impaction was the most leading condition 313 (14.8%) followed by hearing loss 85 (4.0%) while suppurative otitis media 4 (0.2%) was the least condition. The finding that 14.8% had cerumen impaction, corroborate with the finding from a study done in three primary schools in Kilimanjaro which found that "cerumen was the most common cause of hearing impairment" among primary school children [8].

Health communication, ear examination and screening and provision of ear care services at Mbeya Zonal Referral Hospital

The health providers delivered health education, examined ears and screened hearing loss to individuals that visited the commemoration place at Mbeya Zonal Referral Hospital. The event was branded using banners, t-shirts and posters which had myths and realities in regard to hearing loss and ear care that were adopted from WHO World Hearing Day 2024 communication tool kit [9] (shown in table 4 and 5). It was arranged that before any service was rendered to the client, health education was provided in an organized group of people. A total of 553 individuals (both children and adults) were examined, out of these their age distribution was 6-15 years old were 209(37.8%) while those aged 16 years old or more were 344 (62.2%) respectively. Of the 553, 149 (26.9%) had cerumen impaction, 36 (6.5%) had chronic suppurative otitis media. Furthermore, following ear examination, 243 had pure tone audiometry tests done and 167 out of 243 (30.2%) were found to have hearing loss.

Table 4: Poster 1-Changing mindset about ear care

Condition	Myth	Reality
Ear wax	Needs to be cleaned	Ears are self-cleaning
Ear pain	Treat with home remedy	See a health professional
Cotton buds	Good for ears	Not for ears
Discharge from ears	Small inconvenience	An urgent problem

Source: WHO 2024

Table 5: Poster 2-Changing mindset about hearing loss

Condition	Myth	Reality
Hearing loss	Old age	Can happen at any age
Hearing loss	Inevitable	Preventable
Hearing aids	Don't work well	Better hearing, better life
Hearing aids	Too expensive	Investment in quality life
Tinnitus	Annoyance	Warning sign of hearing loss

Source: WHO 2024

CONCLUSIONS

Cerumen impaction was the most prevalent ear condition followed by hearing loss. Therefore, introducing outreach screening services or strengthening delivery of ear and hearing care especially in primary health care facilities might contribute to early identification and treatment of ear conditions across all age groups. Also, there is a need to continue providing health education that will elicit the early health seeking behaviors for ear services. The Ministry of Health in collaboration with other stakeholders will continue making follow up to ensure that all pupils found to have ear problems get necessary care.

ACKNOWLEDGEMENTS

We, acknowledge the support from all hospitals that enabled ENT specialists and Audiologists to participate in the commemoration as well as other partners who contributed for making the event a success.

AUTHOR DETAILS

[1]Department of Curative Services, Ministry of Health
[2]ENT Department, Muhimbili National Hospital (Upanga)
[3]ENT Unit, Amana Regional Referral Hospital
[4]ENT Department, Mbeya Zonal Referral Hospital
[5]ENT Unit, Dodoma Regional Referral Hospital
[6]ENT Unit, Songea Regional Referral Hospital
[7]ENT Unit, St. Francis Hospital, Ifakara
[8]ENT Unit, Songwe Regional Referral Hospital
[9]Department of Psychology and Special Education, Open University of Tanzania,
[10]Department of Otorhinolaryngology, Muhimbili University of Health and Allied Sciences.

MUHTASARI

Hali ya Masikio na Upotevu wa Usikivu Jijini Mbeya: Taarifa ya Maadhimisho ya Siku Usikivu Duniani 2024 Nchini Tanzania

Msafiri Kabulwa [1*], Edwin Liyombo[2], Fatuma Kibao[3], Benedict Ngunyale[4], Omary Mhochi[4], Raphael Gabriel[4], Zera Kayanda[4], Constantine Kanick[5], Libason Hosea[6], Elias Marandu[7], Maxprince Salu[8], Mwinyikondo Amir[1], Cosmas Mnyanyi[9] Aveline Kahinga [10]

***Kwa Mawasiliano**: Msafiri Kabulwa; email:kabulwan@gmail.com

Utangulizi: Tarehe 3 Machi kila mwaka ni maadhimisho ya siku ya usikivu Duniani tangu ilipoanzishwa mwaka 2007. Duniani kote, maadhimisho ya kwanza yalifanyika mwaka 2015 na nchini Tanzania yalianza mwaka 2020 na yalifanyika katika Hospitali ya Taifa ya Muhimbili. Tukio hili liliandaliwa kwa pamoja. na Jumuiya ya Watalaam wa Maskio, Pua na Koo Tanzania , Wizara ya Afya, Mashirika ya Umoja wa Mataifa na wadau wengine

Mbinu: Tukio la 2024 lilifanyika Jijini Mbeya katika Hospitali ya Rufaa ya Kanda ya Mbeya. Kibali rasmi kuendesha maadhimisho hayo katika Jiji la Mbeya kilipatikana kutoka kwa mamlaka za utawala ngazi mbalimbali za serikali na Idara ya afya ngazi ya mikoa. Shughuli zilizofanyika wakati wa maadhimisho hayo zilikuwa ni uhamasishaji ili kuongeza uelewa uliofanywa kupitia redio na televisheni, elimu ya afya katika shule za msingi zilizotembelewa pamoja na katika viwanja ndani ya hospitali. Zaidi ya hayo, uchunguzi ulifanyika katika baadhi ya shule za msingi zilizochaguliwa na kwa wananchi waliofika katika hospitali

ya rufaa ya Kanda ya Mbeya ambako vibanda vya uchunguzi viliwekwa. Huduma hizo zilitolewa na Madaktari bingwa wa masiko, pua na koo (ENT), wataalam wa usikivu, madaktari, wauguzi na walimu wa Elimu maalum kutoka chuo cha Ualimu cha Patandi.

Matokeo: Jumla ya wanafunzi 4476 kutoka shule za msingi walipatiwa elimu ya afya katika madarasa yao na viwanja vyao vya mikusanyiko ambapo wanafunzi 2114 walipimwa hali za masikio na uwezo wa kusikia. Katika viwanja vya hospitali jumla ya wananchi 553 walipimwa. Wengi wao, 347 (asilimia 62.8) walikuwa wenye umri wa miaka 16 au zaidi. Kati ya wanafunzi 2114 waliopimwa, 313 (asilimia 14.8) na 85 (asilimia 4.0) walikuwa na nta iliyoziba masikio na upotevu wa kusikia mtawalia. Kati ya watu 553 waliofanyiwa uchunguzi katika viwanja vya hospitali hiyo, 149 (asilimia 26.9) walikuwa na nta iliyoziba masikio na 167 kati ya 243 (asilimia 30.2) ambao walipima uwezo wa kusikia sauti walikuwa na upotevu wa kusikia. Maambukizi ndani ya sikio yaligunduliwa katika wanafunzi 4 (asilimia 0.2) kwa wale waliopimwa shuleni ilhali ilikuwa watu 36 (asilimia 6.5) kwa wananchi waliopimwa katika uwanja wa hospitali.

Hitimisho: Nta kuziba masikioni ilikuwa hali ya masikio iliyoenea zaidi na kufuatiwa na kupoteza uwezo wa kusikia. Kwa hivyo, kuanzisha huduma za mkoba za uchunguzi wa kufikia watu katika maeneo yao au kuimarisha utoaji wa huduma ya afya ya masikio na usikivu hasa katika vituo vya huduma ya afya ya msingi kunaweza kuchangia katika utambuzi wa mapema na upatikanaji wa matibabu ya magonjwa ya masikio kwa watu wote. Pia, kuna haja ya kuendelea kutoa elimu ya afya ambayo itaibua tabia za kutafuta mapema huduma za afya ya masikio. Wizara ya Afya kwa kushirikiana na wadau wengine itaendelea kufuatilia ili kuhakikisha kuwa wanafunzi wote waliobainika kuwa na matatizo ya masikio wanapata huduma muhimu.

Maneno muhimu: Nta kuziba masikio, kupoteza usikivu, Siku ya Usikivu Duniani, hali ya masikio, Maambukizi ya sikio

REFERENCES

1. WHO. World Hearing Day: 3 March. Available at: https://web.archive.org/web/20160208195844/http://www.who.int/pbd/deafness/world-hearing-day/en/
2. WHO. World Hearing Day 2024. Available at https://www.who.int/campaigns/world-hearing-day/2024
3. World Health Organization. Millions of people in the world have hearing loss that can be treated or prevented. Awareness is the key to prevention. WHO/NMH/PBD2013.04. WHO and CBM. 2013. Available from: https://www.cbm.org/fileadmin/user_upload/Publications/Millionslivewithhearingloss.pdf
4. WHO. World Hearing Day 2024: Communication toolkit. Available at https://cdn.who.int/media/docs/default-source/documents/health-topics/deafness-and-hearing-loss/communication-toolkit-whd-2024-2_1.pdf?sfvrsn=68df6b84_4&download=true
5. Olaoye A , Kevin Onyenankeya K. A systematic review of health communication strategies in Sub- Saharan Africa-2015-2022. Health Promotion Perspectives, 2023;13: 10-20 doi: 10.34172/hpp.2023.02
6. Adebisi YA, Rabe A, Lucero-Prisno III DE. Risk communication and community engagement strategies for COVID-19 in 13 African countries. Health Promot Perspect. 2021;11(2):137- 47. doi: 10.34172/hpp.2021.18.
7. Ajilore K, Atakiti I, Onyenankeya K. College students' knowledge, attitudes and adherence to public service announcements on Ebola in Nigeria: suggestions for improving future Ebola prevention education programmes. Health Educ J. 2017;76(6):648-60. doi: 10.1177/0017896917710969
8. Ertzgaard SI, Kristin N, Sofie T, Sindberg HG, Bang HT, Cosmas M, Vedul TT, Aslam N, Jon Ø. Prevalence of hearing impairment among primary school children in the Kilimanjaro region within Tanzania. International Journal of Pediatric Otorhinolaryngology. 2020;130:109797
9. Stead M, Angus K, Langley T, Katikireddi SV, Hinds K, Hilton S, Lewis S, Thomas J, Campbell M, Young B, Bauld L. Mass media to communicate public health messages in six health topic areas: a systematic review and other reviews of the evidence. Public Health Research. 2019; 3:7(8).

Epidemiological Distribution and Factors Associated with Mortality among Measles Cases from Katavi region in Tanzania: A Cross-Sectional Study.

David Osima ,[1,2*] Peter Torokaa,[1,2] Ally KHussein,[2] Solomon Moshi,[3] Danstan Nngenzi,[3] Vida Mbaga,[3] Julius Massaga[4] and Loveness Urio,[2]

***Corresponding Author:** David Osima; email:osimadavid@yahoo.com

ABSTRACT

Introduction: Measles is a potentially fatal contagious disease, and when it attacks a nonimmune population, it has almost 100% manifestation with related complications. Despite the availability of measles and rubella vaccination to the under-five populations, outbreaks continue to occur in different regions in Tanzania with case fatality ranging from 5-10%. Katavi region experienced measles outbreaks in the years 2022 and 2023. This study was conducted to determine the epidemiological distribution of measles cases and the factors associated with mortality among cases in the Katavi region.

Methods: A retrospective cross-sectional study was conducted from December 2022 to March 2023 in the Mpimbwe and Nsimbo districts of the Katavi region. The standardized line list from the Tanzania Ministry of Health includes individuals whose cases met the standard case definitions for measles. The median (with interquartile range) was used, and categorical variables were presented in frequencies and proportions. Disease trends versus time were reported using an epi curve; case distribution was summarized in a map. Logistic regression was used to determine the factors associated with mortality among reported measles cases using a forward selection model, whereby $P<0.05$ at a 95% confidence interval was considered statistically significant.

Results: A total of 2,400 individuals were reported, with a median age of 5 years (2-10). Among the district-reported measle cases, Mpimbwe district council had more cases 2,223/2,400 (92.6%) the most affected age group of 5-14yrs 1,004/2,400 (41.8%). The cases reported from the community had forty-six times the odds of being fatal "46.3, 95% CI: 13.8-155.9" and those not treated had approximately eight times the odds of dying (AOR 7.6, 95% CI: 2.2-25.8).

Conclusions: Measles outbreaks that occurred in Mpimbwe and Nsimbo districts in the Katavi region affect more individuals with age group of 5 to 14 years. Cases found in the community and those who did not receive treatment had high odds of dying compared to other groups. Since the two district councils are located within Katavi National Park, which makes it hard to reach with limited healthcare services to mobile populations, there is a need to strengthen surveillance to enhance early detection of outbreaks and immediate response.

Key Words: Epidemiological distribution, Risk factors, Measles, Death, Katavi region

INTRODUCTION

Measles is a public health concern due to its effect on morbidity and mortality among children and especially those under-five [1]578 specimens were tested over the period 2015—2020 yielding 401 (1.8%. Globally, 95% of measles deaths occur in low-income countries [2]. When infection attacks a nonimmune community, 100% of the population will be infected, with malnourished children expressing a high rate of morbidity and mortality with complications due to measles infection [2]. In Africa, before the measles vaccination, the disease affected more than 1 million cases annually [3]. The World Health Organization (WHO) initiated a vaccination program that was widely implemented in African countries by 2009. Despite vaccination, outbreaks continue to occur and case fatality rates range from 5-10% where in Africa 28,000 measles deaths are reported [4,5]

The measles and rubella (MR) coverage in the Katavi region in 2022 was 121% MR1 and 90% MR2 reported by the Ministry of Health (MoH). The Katavi region faced an outbreak from late 2022 to early 2023 which was reported to be severe and caused mortality among the under-fives with complications related to the measles itself [6]. Regardless of high MR vaccination coverage, it is still not known the cause of the occurrence of severe outbreaks of measles and rubella in the Katavi region. Determining the epidemiological distribution of measles cases and its associated factors leading to deaths helps in planning and improvement of the services especially vaccination among children. Therefore, the present study was conducted to analyze data from the specified region to determine the distribution of the disease and factors associated with the mortality of reported measles cases from the Katavi region.

METHODS

Study design

This was a cross-sectional study conducted from December 2022 to March 2023 in Mpimbwe and Nsimbo districts of the Katavi region.

Study settings

The study was conducted in Mpimbwe and Nsimbo District Council (DC), Katavi region involving individuals reported with measles as per standard case definition during the outbreak period. Mpimbwe District lies in the South of Katavi region while Nsimbo is located in the North. The region occupies a total land area of 7,704.84 km^2. The two districts are hard to reach meaning that are not easily accessible due to physical, logistical and security as they are adjacent to the Katavi National Park which makes the district have food and health insecurity.

Study Population

The population studied was all individuals reported at health facilities at the time of outbreaks from the Mpimbwe and Nsimbo districts.

Variables.

Dependent variable

The outcome variable is the patient's outcome due to measles as a binary variable (alive or dead) as is reported through the line list.

Independent Variables

The explanatory variables included age, sex, district, health facility, vaccination status, treatment status, date of rash onset, and patient category. Patients were categorized as those seen in the community and those attending the hospital.

Data Collection Methods

Data were collected from the hospital and community level by healthcare workers through a designated line list from the Ministry of Health. The line list directed healthcare workers to report cases following the disease standard case definition of measles.

Case definition of suspected measles: Any person with fever of temperature ≥38.C and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes), or any person in whom a clinician suspects measles [7].

Case definition of confirmed measles: A suspected case with laboratory confirmation (positive IgM antibody) or an epidemiological link to a confirmed case in an outbreak [7].

So, any person found with the above clinical signs and symptoms were reported through the line list. There were cases in persons brought to the hospital and identified by healthcare workers and others cases were diagnosed through active case detection in the community. Cases found in the household were enrolled as community cases [7].

Data analysis

Analysis was done using STATA software version 15.1. Categorical variables were presented using frequencies and proportions. The median (interquartile range) for age were reported. Peason Chi square test was used for comparison for categorical variable. Disease trends versus time was reported using epi-curve, and cases distribution summarized in a Map. The factors associated with mortality among measles cases using a logistic regression model were constructed. The forward selection model was used to test the variables for their significance and those variables with P<0.2 were included in multivariable analysis. A 95% confidence interval and P<0.05 was considered to be statistically significant.

Ethical Consideration

Permission to analyze the dataset was obtained from the Ministry of Health of Tanzania. Data was treated anonymously before it was analyzed to ensure patients confidentiality.

RESULTS

Socio-demographic Characteristics

A total of 2,400 individuals were reported in line list. The median age, 5 years interquartile rage (2-10). Mpimbwe District had most cases of measles 2,223/2,400 (92.6%). The age group ranging from 5 years to 14 years had more individuals compared to other age-groups 1,004/2,400 (41.8%). Female and male were almost equally distributed. A total of 1,813/2,400 (75.5%) was unvaccinated (Table 1).

Table 1: Socio-demographic characteristics of the measles reported cases from Katavi Region from December 2022 to March 2023 (N=2,400).

Variables	N (2400)	(%)
Age Group		
< 9 months	217	9.0
9months – 4 years	941	39.2
5 – 14 years	1004	41.8
≥15 years	238	10.0
Gender		
Female	1238	51.6
Male	1162	48.4
Districts		
Mpimbwe	2223	92.6
Nsimbo	177	7.4
Vaccination Status		
Unvaccinated	1813	75.5
Vaccinated	587	24.5

Distribution of Reported Measles Cases at Katavi Region by Place

Mpimbwe district has the greatest number of cases 2,223 in which Majimoto ward had reported 765/2,223 (34.4%) followed by Kibaoni 433/2223 (19.5%). Nsimbo district has reported few numbers of cases, however Ugala ward had 161/177 (91.0%) of all cases in the district. (Figure 1).

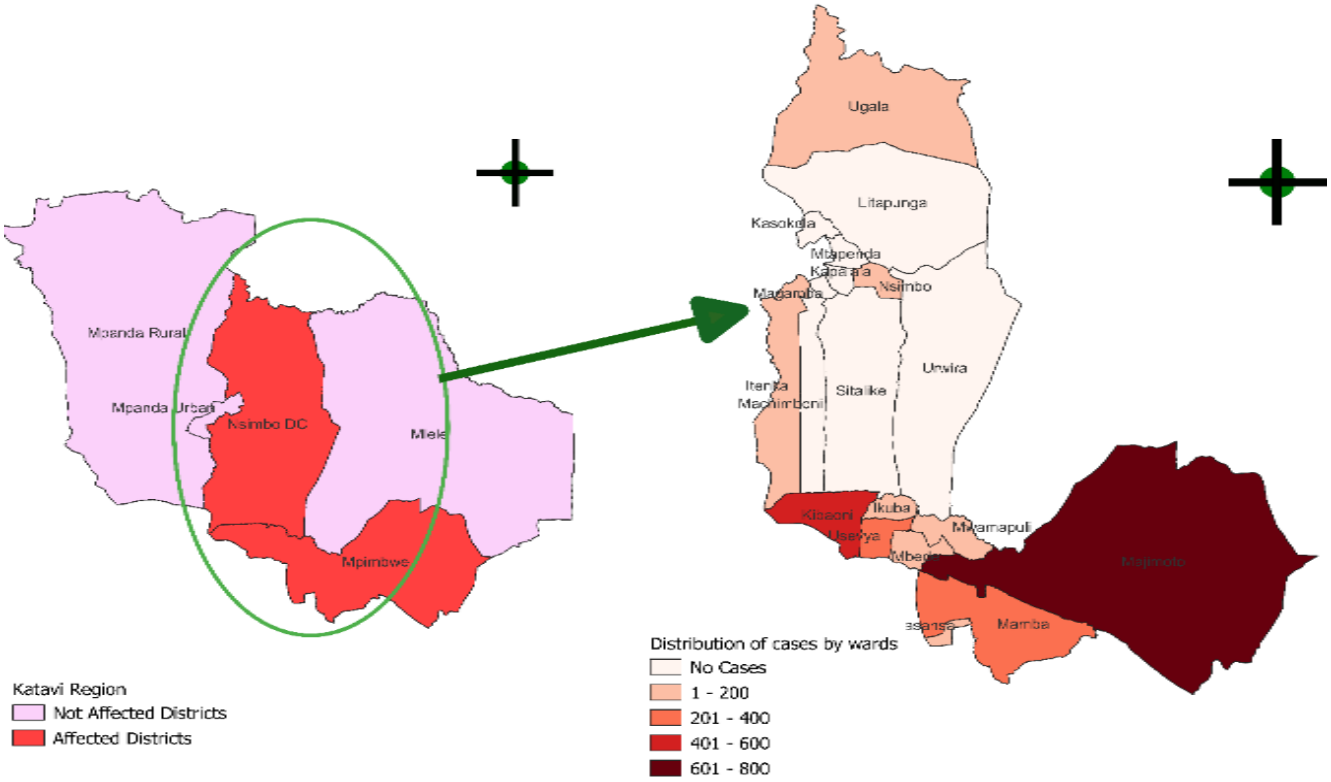

Figure1. A map shows the distribution of measles cases at Mpimbwe and Nsimbo District Council in Katavi Region. The figure is similar but not identical to the original image and is therefore illustrative purpose only.

Distribution of Reported Measles Cases at Katavi Region by Time

Figure 2 shows trends of deaths and cases reported from Katavi during measles outbreak December 2022 to March 2023. Measles outbreaks were consistently reported from the 1st December with different peaks in between which was accompanied by death of cases which started from 31st December 2022 up to 18th January 2023. The outbreak became worse with its highest peak on 28/02/2023. More cases were found in February 2023.

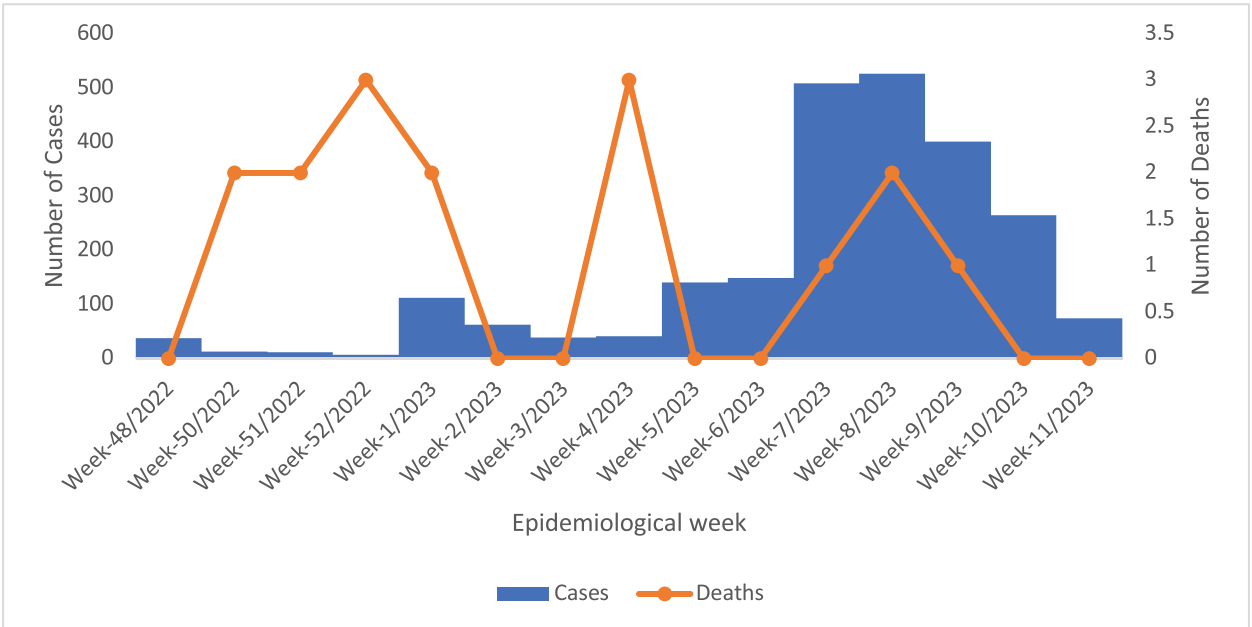

Figure 2. Trends of deaths and cases reported from Katavi during measles outbreak December 2022 to March 2023

Factors Associated with Mortality among Measles Reported Cases from Katavi Region December 2022 to March 2023.

Compared to cases reported at hospital, those diagnosed at community level had about forty-six times greater odds of dying with measles (AOR 46.33, 95%CI: 13.76-155.91). The likelihood of dying was nearly eight times for those who were not given treatment compared to treated group (AOR 7.62, 95%CI: 2.25-25.79). The cases who reported to be vaccinated had reduced odds of mortality with no statistically significant (AOR 0.15, 95%CI: 0.02-1.18). (Table 2).

Table 2: Factors Associated with Mortality among Measles Reported Cases from December 2022- March 2023, Katavi Region

Characteristics	Deaths n=16 (%)	Crude Prevalence Odds ratio (COR)	Adjusted Prevalence odds ratio (AOR)
Age Group			
Under five years	10 (0.8)	1.4 (0.5-3.9)	1.11 (0.4-3.2)
Over five years	6 (0.5)	1	1
Vaccination Status			
Vaccinated	1 (0.2)	0.2 (0.03-1.4)	0.2 (0.02-1.18)
Unvaccinated	15 (0.8)	1	1
Patients' Category			
At Community	12 (3.1)	16.0 (5.1-49.9)	46.3 (13.8-155.9)
At Hospital	4 (0.2)	1	1
Treatment Status			
No treatment	12 (0.7)	0.89 (0.3-2.8)	7.6 (2.3-25.8)
Treated	4 (0.7)	1	1

DISCUSSION

This study showed measle outbreaks which had occurred in two districts of Mpimbwe and Nsimbo in Katavi region. The outbreaks affected all populations with age group of 5 to 14 years being more affected. Majimoto ward had high number of cases compared to other reported wards. Cases found at community and those did not receive treatment had high odds of dying compared to other groups.

The study found that the age group between 5-14 years were more affected compared to other age group. The findings were similar to the studies done elsewhere and showed that the most affected were those aged 5 to 15 years [8–10]. The affected area is found within the Katavi National Park, which is a hard-to-reach area and needs a multi-sectoral approach during the outreach services, this led to poor exposure of the population to measles-rubella vaccination.

This can be attributed to the fact that the affected age group could no longer rely on maternal immunity, which typically wanes after the age of five. As a result, their immunity against the measles virus was lower, making them more vulnerable compared to other age groups [11].

The study found that there was a gradual increase in cases from December 2022 to a high peak in February 2023. Weather changes influence measles outbreaks, so the observed increase in cases in December may be linked to the higher rainfall experienced in the area during that time [12]. The climatic change may influence the increase of cases in the community which is caused by difficulty in accessing the health facilities, and obstacles to health care providers to implement different interventions at the community level to cut off the transmission, like health education, active cases searches, and contact tracing [13,14]. However, the drop in cases as revealed by the Epi curve showed the effectiveness of interventions that were implemented which included mass vaccination campaigns, risk communication, and community engagement.

The study found that persons who were not treated were almost eight times the odds of dying compared to those who were treated. Our findings were similar to the study done in Cameroon that shows a higher survival among children with measles who were treated [15]. Tshe risk of dying is high due to complications of measles like dehydration and severe pneumonia [16–18].

The study revealed that cases found at the community had 46 times the odds of dying compared to those attended at hospital. Our finding is in line with a study done in Democratic Republic of Congo [19]. Seeking health care among those affected might be associated with limited knowledge or health education related to measles or perceived inadequate quality health services rendered. Also, the high risk of not seeking health care could be due to the study setting. The area is hard to reach due to the presence of Katavi National Park. This requires special attention from national park officials to provide security and permission to health workers to reach the available population within the national park.

The study was subjected to several limitations including missing important variables of the used secondary data from the line-list which included the cases as well as small of fatal cases observed. The findings included only the Katavi region in two districts makes the interpretation not be generalizable.

In a study with a large sample size, a small number of outcomes, such as fatal cases, can affect the precision of the findings. This limited number of events may introduce variability and reduce the reliability of the results. Additionally, it increases the likelihood of sampling errors, potentially skewing the conclusions

CONCLUSIONS

Measles outbreaks that occurred in Mpimbwe and Nsimbo District Councils in Katavi region affected all populations with age group of 5 to 14 years being more affected. Cases found at community and those did not receive treatment had high odds of dying compared to other groups. Since the two district councils are located within Katavi National Park, that makes hard to reach with limited healthcare services to the population which is mobile, there is a need of strengthening surveillance under multi-sectorial approaches in order to enhance early detection of outbreaks and immediate response.

ACKNOWLEDGEMENTS

We express our gratitude to the Director of Preventive Services, the Epidemiology Executive Director at the National Epidemiology section, and all staff for their cooperation and hard work in supporting and accomplishment of this work. We also extend our appreciation to the RHMT/CHMT Katavi Region. We are grateful for the support and guidance provided by our supervisors throughout the concept development, data collection, analysis, and report-writing processes. We acknowledge the financial support provided by CDC/PEPFAR through Mzumbe University and the support from the TFELTP program for their technical assistance.

AUTHOR DETAILS

[1]Muhimbili University of Health and Allied Sciences, School of Public Health and Sciences (SPHSS), Dar es Salaam, Tanzania.
[2]Tanzania Field Epidemiology and Laboratory Training Program (TFELTP) Dar es Salaam, Tanzania.
[3]Department of Preventive Services-Epidemiology section Ministry of Health, Tanzania.
[4]Editorial Office, TPHB, Dar es Salaam

MUHTASARI

Ukubwa wa Tatizo la Surua na Visababishi Vinavyohusiana na Vifo Miongoni mwa Wagonjwa wa Surua Kutoka Mkoa wa Katavi nchini Tanzania

David Osima ,[1,2]* Peter Torokaa,[1,2] Ally KHussein,[2] Solomon Moshi,[3] Danstan Nngenzi,[3] Vida Mbaga,[3] Julius Massaga[4] and Loveness Urio,[2]
***Kwa Mawasiliano:** David Osima; email:osimadavid@yahoo.com

Utangulizi: Surua ni ugonjwa hatari wa kuambukiza, na unaposhambulia watu wasio na kinga ya mwili, huwa na udhihirisho wa karibu asilimia 100 na matatizo yanayohusiana nayo. Licha ya kuwepo kwa chanjo ya surua na rubela kwa watu walio chini ya umri wa miaka mitano, milipuko inaendelea kutokea katika mikoa mbalimbali nchini Tanzania huku vifo vikiwa ni kati ya asilimia 5-10. Mkoa wa Katavi ulikumbwa na milipuko ya surua katika miaka ya 2022 na 2023. Utafiti huu ulifanyika ili kubaini ukubwa wa tatizo la surua na visababishi vinazohusishwa na vifo miongoni mwa wagonjwa katika mkoa wa Katavi.

Mbinu: Utafiti wa uchambuzi wa takwimu ulifanyika kuanzia Desemba 2022 hadi Machi 2023 katika wilaya za Mpimbwe na Nsimbo mkoani Katavi. Orodha sanifu kutoka Wizara ya Afya ya Tanzania ilijumuisha watu waliohisiwa kuwa na ugonjwa ambapo visa vilithibitika kuwa na ugonjwa wa surua. Matokeo kutokana na kuchakata takwimu yalitolewa kwa kutumia wastani na asilimia. Mtiririko wa wagonjwa kulingana na wakati uliripotiwa kwa kutumia epi curve; na jinsi visa vilivyosambaa ulionyeshwa katika ramani. Takwimu zilichakatwa zaidi ili kupata visababishi vinavyohusiana na vifo kati ya visa vya surua.

Matokeo: Jumla ya watu 2,400 waliripotiwa, na umri wa kati ulikuwa miaka 5 (miaka 2-10). Miongoni mwa wagonjwa wa surua walioripotiwa, halmashauri ya wilaya ya Mpimbwe ilikuwa na wagonjwa wengi zaidi 2,223/2,400 (asilimia 92.6) kundi la watu wenye umri wa miaka 5-14 waliathirika zaidi, 1,004/2,400 (asilimia 41.8). Visa vya surua viliripotiwa kutokea kwenye jamii vilikuwa na uwezekano wa kufa mara arobaini na sita ukilinganishwa na visa vingine (AOR 46.3, 95% CI: 13.8-155.9) na visa ambavyo havikutibiwa vilikuwa na takriban mara nane ya uwezekano wa kufa (AOR 7.6, 95% CI: 2.2-25.8))

Hitimisho: Ugonjwa wa surua uliotokea katika wilaya za Mpimbwe na Nsimbo mkoani Katavi huathiri zaidi watu wenye umri wa miaka 5 hadi 14. Visa vilivyopatikana katika jamii na wale ambao hawakupata matibabu walikuwa na uwezekano mkubwa wa kufa ikilinganishwa na vikundi vingine. Kwa kuwa halmashauri hizo mbili za wilaya ziko ndani ya Hifadhi ya Taifa ya Katavi, jambo ambalo linasababisha ugumu wa kufikiwa na huduma za afya kwa vile ni watu wanaohama-hama, hivyo, ipo haja ya kuimarisha mpango wa ufuatiliaji ili kuongeza ugunduzi wa mapema wa milipuko na kupata huduma ya haraka.

Maneno Muhimu: Ukubwa wa tatizo, Visababishi vinavyohusiana, Surua, Kifo, Mkoa wa Katavi

REFERENCE

1. Yousif M, Hong H, Malfeld S, Smit S, Makhathini L, Motsamai T, et al. Measles incidence in South Africa: a six-

year review, 2015—2020. BMC Public Health [Internet]. 2022;22(1):1–9. Available from: https://doi.org/10.1186/s12889-022-14069-w
2. Manual T, Measles FOR, Dose S, Managers DH. the United Republic of Tanzania Immunization and Vaccine Development Programme Training Manual for Measles Second Dose for. 2014;
3. Goodson JL, Masresha BG, Wannemuehler K, Uzicanin A, Cochi S. Changing epidemiology of measles in Africa. J Infect Dis. 2011;204(SUPPL. 1):205–14.
4. WHO WHO. Measles outbreaks Strategic Response Plan 2021-2023 [Internet]. 2021. 1–34 p. Available from: https://apps.who.int/iris/bitstream/handle/10665/340657/9789240018600-eng.pdf
5. World Health Organization. WHO African Regional Guidelines For Measles and Rubella Surveillance WHO Regional Office for Africa. Who. 2015;(April):1–82.
6. TAARIFA YA MLIPUKO WA WA SURUA-KATAVI_16 Feb 2023.pdf.
7. Of M, Community H. The United Republic of Tanzania Ministry Of Health Community Development , Gender , Elderly and. 2014;(March):1–28.
8. Boshe JI, Malima C. Impact of anthrax outbreak on the impala population of Lake Manyara National Park, Tanzania. Afr J Ecol. 1986;24(2):137–40.
9. Minetti A, Kagoli M, Katsulukuta A, Huerga H, Featherstone A, Chiotcha H, et al. Lessons and challenges for measles control from unexpected large outbreak, Malawi. Emerg Infect Dis. 2013;19(2):202–9.
10. Jallow MM, Sadio BD, Mendy MP, Sy S, Fall A, Kiori D, et al. Measles and Rubella Incidence and Molecular Epidemiology in Senegal: Temporal and Regional Trends during Twelve Years of National Surveillance, 2010–2021. Viruses. 2022;14(10):2010–21.
11. Kanakoudi-Tsakalidou F, Farmaki E, Papadimitriou E, Taparkou A, Agakidou E, Glykou S, et al. Humoral immunity against measles in mother-infant pairs during the first year of life in greece: A cross-sectional study. Vaccines. 2021;9(2):1–10.
12. Outlook R. CLIMATE OUTLOOK FOR MASIKA RAINFALL SEASON Highlights for Masika Rainfall Season March – May , 2023. 2023;1–8.
13. Ekström J. Possibilities and obstacles regarding under-five mortality : A case study in Babati district, Tanzania. 2012;35.
14. Surveillance CD, Malaria RB. Using Climate to Predict Infectious Disease Outbreaks : A Review. English [Internet]. 2004;118 ST-Using climate to predict infectious dise. Available from: http://www.who.int/globalchange/publications/en/oeh0401.pdf
15. Njim T, Agyingi K, Aminde LN, Atunji EF. Trend in mortality from a recent measles outbreak in cameroon: A retrospective analysis of 223 measles cases in the benakuma health district. Pan Afr Med J. 2016;23:1–7.
16. Omole VN, Emmanuel M, Onyemocho A, Gajere J, Elisha P. A Retrospective Investigation of a Measles Outbreak in a District in North-western Nigeria. World J Public Heal [Internet]. 2017;2(3):96–101. Available from: http://article.wjph.net/pdf/10.11648.j.wjph.20170203.12.pdf
17. Vaidya SR, Kamble MB, Chowdhury DT, Kumbhar NS. Measles & rubella outbreaks in Maharashtra State, India. Indian J Med Res. 2016;143(FEBRUARY):227–31.
18. Nsubuga F, Bulage L, Ampeire I, Matovu JKB, Kasasa S, Tanifum P, et al. Factors contributing to measles transmission during an outbreak in Kamwenge District, Western Uganda, April to August 2015. BMC Infect Dis. 2018;18(1):1–7.
19. Gignoux E, Polonsky J, Ciglenecki I, Bichet M, Coldiron M, Lwiyo ET, et al. Risk factors for measles mortality and the importance of decentralized case management during an unusually large measles epidemic in eastern Democratic Republic of Congo in 2013. 2018;1–12.

Prevalence and Associated Factors of Hypertension among Staff Working in Formal Government Sectors in Temeke municipality, Dar es salaam Tanzania

Philipo Shineneko [1,2*], Happy Nkunda[1], Ally Mussa[1], Muhsin Siraji[1], Ester John[1], Godwin Mushi[1], Laurent Chipatta [1], Jonas Lulandala[1].

***Corresponding Author:** Philipo Shineneko;email: philipolambo@live.com

ABSTRACT

Introduction: Hypertension is a significant global public health challenge and among the leading modifiable risk factors for cardiovascular diseases and death. The prevalence of hypertension varies among different subpopulations across occupational categories. There is limited information on the magnitude of hypertension among staff working in government sectors in the local context of Temeke municipality.

Methods: We conducted a cross-sectional analysis of data collected from staff working in formal government sectors within Temeke Municipality who were screened for hypertension and risk factors during the NCD commemoration week held from November 9–16, 2024. Continuous variables were summarized using means with standard deviations, while categorical variables were presented as frequencies and proportions. To identify factors associated with hypertension a modified Poisson regression analysis was employed. Variables with a p-value <0.20, at 95% confidence interval in the bi-variate analysis, were included in a multivariate analysis to account for potential confounders.

Results: A total records of 414 individuals were analyzed after data cleaning. Female accounted for 228 (55%) of all individuals. The mean systolic blood pressure (SBP) and diastolic blood pressure (DBP) among female were 121.26 ± 15.08 mmHg and 74.10 ± 11.26 mmHg, respectively. The mean SBP and DBP among male were 128.19 ± 19.06 mmHg and 77.24 ± 12.23 mmHg, respectively. The overall prevalence of hypertension was 20.5% (95% CI: 16.7–24.7%), notably higher among males, at 27.4% (95% CI: 21.1–34.4%), compared to females 14.9% (95% CI: 10.6–20.2%). Factors such as been male (Adjusted Prevalence Ratio [aPR]: 2.2, 95% CI: 1.4–3.6, p = 0.001), age 41–50 years (aPR: 3.1, 95% CI: 1.1–8.3, p = 0.03) and over 50 years (aPR: 5.7, 95% CI: 2.1–15.4, p = 0.001), Obesity (aPR: 2.6, 95% CI: 1.2–5.8, p = 0.02), and occasional consumption of sugar-sweetened beverages (aPR: 2.7, 95% CI: 1.5–4.8), were significantly associated with hypertension.

Conclusion: This study underscores the burden of hypertension among government employees in Temeke Municipality and identifies key behavioral and anthropometric risk factors. Interventions addressing lifestyle modifications and early detection should be prioritized to mitigate the growing burden of hypertension and its associated complications in government staff working in urban settings

Key Words: Hypertension, risk factors, government employees, Temeke Municipality

INTRODUCTION

Hypertension, commonly known as high blood pressure, is defined as a persistent elevation of blood pressure exceeding 140/90 mmHg. It can also be characterized by a systolic blood pressure of 140 mmHg or higher, a diastolic blood pressure of 90 mmHg or higher[1]. Although the precise causes of primary hypertension remain largely unknown, several predisposing factors have been linked to its development. Modifiable risk factors play a significant role and include an elevated body mass index, unhealthy lifestyle habits such as excessive salt and alcohol intake, physical inactivity, an imbalanced diet, smoking, and exposure to environmental tobacco smoke. Psychosocial stressors and socioeconomic status have also been implicated. Non-modifiable risk factors, such as advancing age, gender, ethnicity, and a family history of hypertension, further contribute to the condition [2].

Hypertension remains a significant global public health challenge and is a leading modifiable risk factor for cardiovascular disease (CVD) and premature death. The WHO Global Report on Hypertension (2023) estimates that by 2019, the number of adults living with hypertension had risen to nearly 1.3 billion, doubling from 650 million in 1990. Approximately one in three adults is affected by hypertension, with men under the age of 50 showing a slightly higher prevalence than women. However, after the age of 50, the prevalence increases markedly to nearly 49%, with both men and women being equally affected. Despite the critical importance of early diagnosis and timely treatment, nearly 46% of individuals living with hypertension remain undiagnosed

[3], underscoring the urgent need for improved screening and awareness efforts.

Studies indicates that the prevalence of hypertension varies across geographical and income categories, with an estimated 35% of adults affected in developed countries and 40% in developing countries [2,4,5]. In Africa, hypertension poses a significant public health challenge, with prevalence rates differing substantially across regions. Current estimates for Sub-Saharan Africa reveal a wide disparity, with hypertension prevalence ranging from as low as 6% to as high as 48%, reflecting variations in regional, demographic, and environmental factors [6].

In Tanzania, recent studies indicate a notable increase in hypertension prevalence since the national STEP project survey in 2012, which estimated it at 25.9% [7]. This rise is attributed to lifestyle changes, including increased urbanization, dietary shifts, and more sedentary behavior. Studies conducted in the last decade across both urban and rural areas of Tanzania have reported hypertension prevalence ranging from 26% to 45%. [8–13]fewer studies in Tanzania have evaluated its role in screening for CVD risk. This study aimed to determine the role of waist circumference in screening for hypertension, a major risk for CVD. Methods: An analytical cross-sectional study was conducted in Manzese ward, Dar es Salaam, from August to September 2023. Adults who attended a screening campaign were systematically randomly sampled. Data were collected using WHO STEPwise Approach to Chronic Disease Risk Factor Surveillance questionnaire. The relationship between waist circumference and hypertension was analyzed using a Modified Poisson regression model with robust standard errors. Results: Among 561 participants screened, 70.4% were female, with a median age of 47 years (IQR: 34–58).

Hypertension is an emerging public health challenge in developing countries such as Tanzania, affecting individuals across all socioeconomic classes, from the underprivileged to the affluent. Despite increase in number of outpatient visits and hospital admissions related to hypertension in health facilities particularly in rapidly urbanizing areas such as Temeke, there is limited information regarding the prevalence of hypertension, awareness of modifiable risk factors, and its long-term implications within occupational settings in the community. Therefore, this analysis aimed to assess the prevalence of hypertension and its associated factors among staff working in formal government sectors in Temeke Municipality, who were screened for non-communicable diseases during the World Non-Communicable Diseases Commemoration Week in November 2024. Understanding the magnitude of hypertension and identifying its associated risk factors across in this sub-population are critical steps toward developing effective preventive measures in the occupational setting.

METHODOLOGY

Study Design and Settings

This was a retrospective cross-sectional dataset analysis of data collected from staff working in formal government sectors within Temeke Municipality screened for non-communicable diseases and the risk factors during the World Non-Communicable Disease (NCD) Week. The screening, conducted from November 9 to 16, 2024, aimed to identify non-communicable diseases and associated risk factors among civil servants. Temeke Municipality is one of the five districts in the Dar es Salaam region, which serves as Tanzania's business capital and a key economic hub for landlocked countries in Eastern and Southern Africa. Covering an area of approximately 420 square kilometers, Temeke Municipality had an estimated population of 1,346,674, according to the latest national census conducted in 2022 [14].

Study Population

The study population consisted of government employees working across various institutions within Temeke Municipality. Data were retrieved from a dataset stored in the Kobo Toolbox software, which had been used to capture participant details during screening for hypertension and associated risk factors for non-communicable diseases (NCDs).

Data Abstraction

This study utilized secondary data obtained from individual participants' social demographic, behavior/lifestyle histories and physical examination records obtained during screening of non-communicable disease. The information was retrieved from Kobo Toolbox software that was used to collect data during the exercise, exported as Microsoft Excel spread sheet and subsequently transferred to STATA version 15.1 for data management and final analysis

Study Variables

Dependent variables

The dependent variable for this analysis was hypertension status, dichotomized as either normotensive or hypertensive if a systolic blood pressure is ≥140 mmHg or diastolic blood pressure ≥ 90 mmHg.

Independent variables

The independent variables included socio-demographic factors (age, sex, and work category), behavioral and lifestyle factors (physical activity, smoking, alcohol consumption, and consumption of sugar-sweetened beverages (soda or energy drinks) and Body Mass Index (BMI) categories such as underweight (<18.5kg/m^2), normal (18.5-24.9kg/m^2), overweight (25-29.9 kg/m^2), and obese (>=30 kg/m^2) derived from anthropometric measurements (height in meters), and weight in kilograms)) and waist circumference.

Data analysis

An exploratory data analysis was conducted to evaluate the dataset for missing values, the presence of influential outliers, independence of errors, and normality. Descriptive characteristics were used to summarize continuous variables using means with

standard deviations, while categorical variables were presented as frequencies and proportions.

Modified Poisson regression models were used to examine the associations between these factors and hypertension. Independent variables with a p-value <0.20, at 95% confidence interval in the bi-variate analysis, were included in a multivariate analysis to account for potential confounders. Model fit was assessed using the deviance and Pearson chi-square goodness-of-fit tests to ensure the adequacy of the Poisson regression model.

Results were presented in tables, text, and figures. The strength of associations between predictor variables and hypertension was expressed as adjusted-prevalence ratios (aPRs), with statistical significance determined at a 95% confidence interval (CI) and a p-value threshold of <0.05.

Ethical Considerations

The approval and permission to use the data for analysis was granted by Temeke Municipal Council. The data were kept confidential and never shared with any third party. Names and addresses of individuals in the dataset were not recorded during data collection.

RESULTS

Sociodemographic and Anthropometric Characteristics of the participants

A total of 414 participants were included in the final analysis, with 228 (55%) being female. The mean age of the participants was 38.25 years (SD ±10.17). Administrative or managerial roles were reported by 19.8% of the participants, with a similar distribution across genders. More than half 220(53.1%) of the participants had an elevated waist circumference, with a nearly equal distribution between males and females. Additionally, over one-third 146(35.3%) of the participants were classified as obese (BMI ≥30 kg/m²). (Table 1).

Table 1: Sociodemographic and Anthropometric Characteristics of staff working in formal government sectors in Temeke Municipality, (N=414)

Variables	Frequency		Overall N =414 (%)
	Female n=228 (%)	Male n=186 (%)	
Age group (years)			
<=30	60(26.3)	51(27.4)	111(26.8)
31-40	82(36.1)	66(35.5)	148(35.8)
41-50	49(21.5)	38(20.4)	87(21.0)
>50	37(16.2)	31(16.7)	68(16.4)
Occupational category			
Administrative/Managerial	46(20.2)	36(19.3)	82(19.8)
Professional/Technical	118(51.7)	124(66.7)	242(58.5)
Service worker	64(28.1)	26(14.0)	90(21.7)
Waist circumference status			
Normal	105(46.1)	89(47.9)	194(46.9)
Elevated	123(53.9)	97(52.1)	220(53.1)
Body Mass Index (kg/m2)			
Normal	52(22.8)	77(41.4)	129(31.2)
Overweight	75(32.9)	64(34.4)	139(33.6)
Obesity	101(44.3)	45(24.2)	146(35.3)

Behavioral and Lifestyle Characteristics

Over one-quarter of the participants 110(26.6%) reported consuming sugar-containing beverages, such as soda or energy drinks, on a daily basis, with a slightly higher among males (28.0%) than females (25.4%). Overall, 33.3% (n=138) of participants reported ever using alcohol, with a higher prevalence among males (39.3%) compared to females (28.5%). Current alcohol use was reported by 30.2% (n=125) of participants, again more prevalent in males (33.3%) than females (27.6%).

Tobacco use was relatively uncommon among participants. Lifetime smoking was reported by 24(5.8%), with a higher prevalence among males (11.3%) compared to females. Current smoking was reported by 3.1% (13) of participants, again with a higher prevalence among males (5.9%).

Engagement in physical exercise meeting the recommended levels of at least 150 minutes of moderate-intensity activity or 75 minutes of vigorous-intensity activity per week was reported by 13.3% (n=55) of participants, with a higher proportion of males (17.7%) than females (9.7%). Notably, the majority (86.7%, n=359) of participants reported not engaging in regular physical activity, with this behavior more common among females (90.3%) than males (82.3%) (Table 2).

Table 2: Lifestyle and behavioral Characteristics of staff working in formal government sectors in Temeke Municipality, (N=414)

Variables	Frequency		Overall N =414 (%)
	Female n=228 (%)	Male n=186 (%)	
Consumption of sugar containing beverages (soda/ energy drinks)			
Rarely	117(51.3)	90(48.4)	207(50.0)
Occasionally	53(23.3)	44(23.6)	97(23.4)
Daily	228(25.4)	52(28.0)	110(26.6)
Ever use alcohol			
Yes	65(28.5)	73(39.3)	138(33.3)
No	163(71.5)	113(60.7)	276(66.7)
Current alcohol user			
Yes	63(27.6)	62(33.3)	125(30.2)
No	165(72.4)	124(66.7)	289(69.8)
Ever smoked			
Yes	3(1.3)	21(11.3)	24(5.8)
No	225(98.7)	165(88.7)	390(94.2)
Current smoker			
Yes	2(0.9)	11(5.9)	13(3.1)
No	226(99.1)	175(94.1)	401(96.9)
Physical exercise			
Yes	22(9.7)	33(17.7)	55(13.3)
No	206(90.3)	153(82.3)	359(86.7)

Prevalence of Hypertension

Prevalence of Hypertension by Sociodemographic and Anthropometric Characteristics

The overall prevalence of hypertension was 20.5% (95% CI: 16.7–24.7%). Among participants, the prevalence of hypertension was 14.9% (95% CI: 10.6–20.2%) among females and 27.4% (95% CI: 21.1–34.4%) among males. The prevalence of hypertension increased progressively with age, showing a significant trend ($P < 0.001$). Participants aged ≤30 years had the lowest prevalence (4.5%). Participants aged >50 years exhibited the highest prevalence of hypertension (55.9%). Staff in administrative/ managerial positions had the highest prevalence of hypertension (30.5%). Participants with elevated waist circumference showed a markedly higher prevalence of hypertension (31.4%) compared to those with normal waist circumference (8.3%) ($P < 0.001$). The prevalence of hypertension increased among those who were overweight (20.1%) and obese (32.9%) (Table 3).

Table 3: Hypertension Prevalence among Staff working in Government Formal Sector by Sociodemographic and Anthropometric Characteristics, (N=414)

Variables	Hypertension Status		
	Normotensive n=329 (%)	Hypertensive n=85(%)	P-value
Sex			
Female	194(85.1)	34(14.9)	0.002
Male	135(72.6)	51(27.4)	
Age group (years)			
<=30	106(95.5)	5(4.5)	
31-40	128(86.5)	20(13.5)	
41-50	65(74.7)	22(25.3)	
>50	30(44.1)	38(55.9)	0.000
Occupational category			
Administrative/Managerial	57(69.5)	25(30.5)	
Professional/Technical	197(81.4)	45(18.6)	
Service worker	75(83.3)	15(16.7)	0.042
Waist circumference status			
Normal	178(91.7)	16(8.3)	
Elevated	151(68.6)	69(31.4)	0.000
Body Mass Index (kg/m2)			
Normal	120(93.0)	9(7.0)	
Overweight	111(79.9)	28(20.1)	
Obesity	98(67.1)	48(32.9)	0.000

Prevalence of Hypertension by Lifestyle and behavioral Characteristics

The frequency of sugar-containing beverage consumption was significantly associated with hypertension (P < 0.001). Prevalence of hypertensive among participants who reported to consume sugar on daily basis was 29.1%.

Participants who reported alcohol use at some point had a hypertension prevalence of 17.8%, compared to 26.1% among those who had never consumed alcohol. However, no significant difference was observed in hypertension prevalence between current alcohol users (18.7%) and non-users (24.8%) (P = 0.157). The prevalence of hypertension was 21.0% among participants who had ever smoked and 12.5% among those who had not (P = 0.316). Similarly, the prevalence among current smokers (20.7%) did not differ significantly from non-smokers (15.4%) (P = 0.641) (Table 4).

Table 4: Hypertension Prevalence Among Staff working in government formal sector in Temeke Municipality, Analyzed by Lifestyle and behavioral Characteristics November 2024, (N=414)

Variables	Hypertension status		
	Normotensive n=329 (%)	Hypertensive n=85 (%)	P-value
Consumption of sugar containing beverages			
Rarely	188(90.8)	19(9.2)	
Occasionally	63(64.9)	34(35.1)	
Daily	78(70.9)	32(29.1)	0.000
Ever use alcohol			
Yes	227(82.2)	49(17.8)	
No	102(73.9)	36(26.1)	0.048
Current alcoholic user			
Yes	235(81.3)	54(18.7)	
No	94(75.2)	31(24.8)	0.157
Ever smoked			
Yes	308(79.0)	82(21.0)	
No	21(87.5)	3(12.5)	0.316
Current smoker			
Yes	318(79.3)	83(20.7)	
No	11(84.6)	2(15.4)	0.641
Physical exercise			
Yes	278(77.4)	81(22.6)	
No	51(92.7)	4(7.3)	0.009

Factors Associated with Hypertension

Male gender was significantly associated with a higher likelihood of hypertension, with males exhibiting two times the risk compared to females (adjusted prevalence ratio [aPR] = 2.3, 95% CI: 1.4–3.6; p = 0.001). The probability of developing hypertension increased progressively with age. Individuals aged over 50 years were approximately six times more likely to have hypertension compared to those aged 30 years or younger (aPR = 6.0, 95% CI: 2.3–16.0; p < 0.001). However, no significant differences in hypertension prevalence were observed across different occupational categories.

Obesity was associated with a twofold increase in the odds of developing hypertension when compared to individuals with a normal body mass index (aPR = 2.2, 95% CI: 0.8–6.3; p = 0.014). While elevated waist circumference was strongly associated with hypertension in unadjusted analyses (prevalence odds ratio [POR] = 3.8, 95% CI: 2.2–6.6; p < 0.001), this association lost statistical significance after adjusting for other factors (aPR = 1.6, 95% CI: 0.9–3.0; p = 0.151).

Additionally, consumption of sugar-sweetened beverages, including soda and energy drinks, was significantly linked to an increased risk of hypertension. Participants who reported consuming these beverages were nearly three times more likely to have hypertension in unadjusted analyses (aPR = 2.7, 95% CI: 1.5–4.7; p = 0.001). After adjusting for other factors, the association persisted but at a lower magnitude (aPR = 1.8, 95% CI: 1.0–3.3; p = 0.051). In contrast, neither past nor current alcohol consumption demonstrated any significant association with hypertension (Table 5).

Table 5: Modified Poisson regression analysis, factors associated with Hypertension Among Staff working in government formal sector in Temeke Municipality, (N=414)

Hypertension	Crude PR (95% Confidence Interval)	P-value	Adjusted PR (95% Confidence Interval)	P-value
Sex				
Female	1		1	
Male	1.8(1.2-2.8)	0.006	2.3(1.4-3.6)	0.001
Age Group (years)				
<=30	1		1	
31-40	3.0(1.2-8.0)	0.028	2.0(0.7-5.5)	0.171
41-50	5.6(2.1-14.8)	0.000	3.1(1.1-8.4)	0.028
>50	12.0(4.3-33.2)	0.000	6.0(2.3-16.0)	0.000
Occupation Category				
Service worker	1		1	
Administrative/Managerial	1.8(1.0-3.5)	0.064	1.2(0.6-2.3)	0.71
Professional/Technical	1.1(0.6-2.0)	0.713	0.9(0.5-1.7)	0.69
Body Mass Index (kg/m2)				
18.5-24.9	1		1	
25-29.9	1.9(1.4-6.1)	0.006	1.7(0.9-4.2)	0.108
>=30	4.7(2.3-9.6)	0.000	2.2(0.8-6.3)	0.014
Waist Circumference Status				
Normal	1		1	
Abnormal	3.8(2.2-6.6)	0	1.6(0.9-3.0)	0.151
Ever Drink				
No	1		1	
Yes	1.5(1.0-2.3)	0.08	1.0(0.4-2.2)	0.988
Current Drink				
No				
Yes	1.3(0.8-2.1)	0.209	1.0(0.4-2.1)	0.904
Consumption of Sugar Containing Beverages				
Rarely	1			
Occasionally	3.8(2.2-6.7)	0	2.7(1.5-4.7)	0.001
Daily	3.2(1.8-5.6)	0	1.8(1.0-3.3)	0.051
Physical exercise				
Yes	1		1	
No	3.1(1.1-8.5)	0.027	2.2(0.8-6.1)	0.133

DISCUSSION

This study assessed the prevalence of hypertension and identified associated risk factors among government employees working in the formal sector in Temeke Municipality. The findings of this study reveal a prevalence of hypertension of 20.5% among government employees in Temeke Municipality, with significant associations identified between hypertension and several demographics, behavioral, and anthropometric factors such as gender, consumption of sugar-sweetened beverages. These results underscore the importance of targeted interventions to address hypertension and its risk factors in this occupational group.

The overall prevalence of hypertension of 20.5% aligns with previous study conducted in similar urban settings in Ethiopia, which reported a prevalence of 19.7% [15]. However, our results were inconsistency low compared with other similar study conducted in sub-Sahara Africa which reported high prevalence ranging from 23.8% to 35% (13,16)disproportionately so in developing countries. Inadequate health care systems and adoption of unhealthy lifestyles have been linked to this emergent pattern. To better understand this trend, it is imperative we measure prevalence of hypertension, and examine specific risk factors, at a local level. This study provides a cross-sectional view of urban residents of Arusha City to determine prevalence and associated risk factors. Methods: Blood pressure was measured

using a digital sphygmomanometer. Interviews were conducted using the WHO STEPwise survey questionnaire to assess lifestyle factors. Dietary intake information was collected by a standardized Food Frequency Questionnaire (FFQ. The observed higher prevalence among males compared to females is consistent with existing evidence highlighting gender disparities in hypertension risk(17,18). This gender disparities could be attributed to lifestyle factors, such as higher rates of smoking, alcohol consumption, and occupational stress among men, as well as potential differences in healthcare-seeking behaviors.

The progressive increase in hypertension prevalence with age, observed in this study, reflects the well-established link between aging and hypertension due to vascular changes and cumulative exposure to risk factors(19). Therefore, older adults may benefit from targeted screening and lifestyle interventions to prevent further morbidity.

Frequent consumption of sugar-sweetened beverages was strongly associated with hypertension in our study. These findings are consistent with evidence linking excessive sugar intake to increased adiposity and metabolic dysregulation (13,20,21)Embase, Cumulative Index to Nursing and Allied Health Literature, and the Cochrane registry were searched from conception through 11 November 2014. Two independent reviewers extracted data and assessed the quality of studies (with the use of the Newcastle-Ottawa Scale leading to weight gain, elevated blood sugar and lipids concentrations.

Inconsistence with the findings from other studies, neither past nor current alcohol consumption showed significant associations with hypertension in our study. This finding diverges from some studies that report alcohol as a modifiable risk factor for hypertension (22–24). The lack of significance in this study may reflect variations in drinking patterns, such as moderate versus binge drinking, which were not explicitly analyzed.

Obesity and elevated waist circumference emerged as critical factors, with obesity doubling the odds of hypertension. This finding aligns with global evidence linking excess body weight to increased blood pressure through mechanisms such as insulin resistance and activation of the renin-angiotensin-aldosterone system (25–27). While the unadjusted association between elevated waist circumference and hypertension was significant, it lost significance after adjustment, suggesting that other factors, such as overall obesity, may mediate this relationship.

LIMITATIONS

This study has some limitations. First, its cross-sectional design does not allow for establishing causal relationships. Second, self-reported behaviors, such as dietary habits and alcohol consumption, may be influenced by recall bias. Lastly, the findings, which are based solely on government employees who participated in the event during the commemoration, may not fully represent the broader workforce in Temeke Municipality.

CONCLUSION

This study underscores the burden of hypertension among government employees in Temeke Municipality and identifies key behavioral and anthropometric risk factors. Interventions addressing lifestyle modifications and early detection should be prioritized to mitigate the growing burden of hypertension and its associated complications in government staff working in urban settings.

ACKNOWLEDGEMENTS

The authors would like to express their heartfelt gratitude to the following contributors: the Municipal Director of Temeke for encouraging staff to participate in the world non-communicable disease commemoration week; the health facility in-charges and their teams for conducting screenings and continuing to serve other clients during the commemoration week; and, most importantly, all participants from various establishments for their willingness to take part in that exercise from which data for analysis were extracted.

AUTHOR DETAILS

[1]. Temeke Municipal Council Health Management Team
[2]. Ministry of Health

MUHTASARI

Ukubwa na Visababishi Vinavyohusiana na Shinikizo la Damu Miongoni mwa Wafanyakazi Wanaofanya Kazi katika Sekta Rasmi za Serikali katika Manispaa ya Temeke, Dar es salaam Tanzania.

Philipo Shineneko [1*], Happy Nkunda[1], Ally Mussa[1], Muhsin Siraji[1], Ester John[1], Godwin Mushi[1], Laurent Chipatta [1], Jonas Lulandala[1].

***Kwa Mawasiliano:** Philipo Shineneko;email: philipolambo@live.com

Utangulizi: Shinikizo la damu ni changamoto kubwa ya afya ya umma duniani kote na ni miongoni mwa sababu hatari zinazoongoza kuwa chanzo cha magonjwa ya moyo na mishipa pamoja na vifo. Ukubwa wa shinikizo la damu hutofautiana kwa kiasi kati ya makundi ya mbalimbali ya watu. Hakuna taarifa za kutosha kuhusu ukubwa wa shinikizo la damu pamoja na sababu zinazohusiana nalo miongoni mwa watumishi wanaofanya kazi katika sekta za serikali katika kutoka Manispaa ya Temeke.

Mbinu: Tulifanya uchambuzi wa takwimu zilizokusanywa kutoka kwa watumishi wanaofanya kazi katika sekta rasmi za serikali ndani ya Manispaa ya Temeke. Watumishi hawa walipimwa shinikizo la damu na visababishi wakati wa wiki ya maadhimisho ya Magonjwa Yasiyo ya Kuambukiza (NCD) iliyofanyika kuanzia tarehe 9-16 Novemba 2024. Uchanganuzi wa takwimu ulifanyika ili kubaini ukubwa na visababishi vinavyohusiana na shinikizo la damu miongoni mwa watumishi hao.

Matokeo: Jumla ya rekodi za watu 414 zilichambuliwa baada ya takwimu kuhakikiwa. Wanawake walikuwa 228 asilimia 55.0 ya watu wote waliohusishwa katika uchambuzi huo. Wastani wa shinikizo la damu la systolic (SBP) na shinikizo la damu la diastoli (DBP) kwa wanawake ilikuwa 121.26 ± 15.08 mmHg na 74.10 ± 11.26 mmHg, kwa mfuatano. Wastani wa SBP na DBP kwa wanaume ilikuwa 128.19 ± 19.06 mmHg na 77.24 ± 12.23 mmHg, kwa mfuatano. Kwa jumla ukubwa wa shinikizo la damu ulikuwa asilimia 20.5 (95% CI: 16.7-24.7%), na ilikuwa kubwa kwa wanaume, kiasi cha asilimia 27.4 (95% CI: 21.1-34.4%), ikilinganishwa na wanawake ambao ilikuwa asilimia 14.9 (95% CI: 10.6-20.2%). Visababishi vilivyohusishwa kuchangia kwa shinikizo la damu kwa kiasi kikubwa ni pamoja na kuwa mwanamume (Uwiano wa Ukubwa wa kupata shinikizo la damu ni mara 2.2, [aPR]: 2.2, 95% CI: 1.4–3.6, p = 0.001). Umri wa miaka 41–50 (aPR: 3.1, 95% CI: 1.1–8.3, p = 0.03) na zaidi ya miaka 50 (aPR:5.7: 95%CI: 2.1–15.4, p = 0.001). Unene wa kupita kiasi mara 2.6 (aPR: 2.6, 95% CI: 1.2–5.8, p = 0.02), na matumizi ya mara kwa mara ya vinywaji vyenye sukari kama soda au vinywaji vya nishati (energy drinks) ilikuwa kwa kiasi cha mara 2.7 (aPR: 2.7, 95% CI: 1.5–4.8) ikilinganishwa na wasio tumia mara kwa mara aina hii ya vinywaji.

Hitimisho: Utafiti huu unaonyesha ukubwa wa tatizo la shinikizo la damu miongoni mwa wafanyakazi wa serikali katika Manispaa ya Temeke na kubainisha visababishi hatari vikuu vya kitabia na vipimo vya kimasirika vya mwili juu ya hali ya lishe ya mtu (anthropometric). Afua zinazoshughulikia marekebisho ya mtindo wa maisha na utambuzi wa mapema zinapaswa kupewa kipaumbele ili kupunguza tatizo linaloongezeka la shinikizo la damu na matatizo yanayotokana nayo kwa wafanyakazi wa serikali wanaofanya kazi katika mazingira ya mijini.

Maneno Muhimu: Shinikizo la damu, visababishi, watumishi wa serikali, Manispaa ya Temeke

REFERENCES

1. World Health Organization (WHO). Hypertension [Internet]. 2023. Available from: https://www.who.int/news-room/fact-sheets/detail/hypertension
2. Abegunde DO, Mathers CD, Adam T, Ortegon M, Strong K. The burden and costs of chronic diseases in low-income and middle-income countries. Lancet [Internet]. 2007 Dec 8;370(9603):1929–38. Available from: https://doi.org/10.1016/S0140-6736(07)61696-1
3. WHO. Global report on hypertension. Vol. 01, Universitas Nusantara PGRI Kediri. 2023. 1–7 p.
4. Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, et al. Global Disparities of Hypertension Prevalence and Control. Circulation [Internet]. 2016 Aug 9;134(6):441–50. Available from: https://doi.org/10.1161/CIRCULATIONAHA.115.018912
5. Danaei G, Singh GM, Paciorek CJ, Lin JK, Cowan MJ, Finucane MM, et al. The Global Cardiovascular Risk Transition. Circulation [Internet]. 2013 Apr 9;127(14):1493–502. Available from: https://doi.org/10.1161/CIRCULATIONAHA.113.001470
6. Gafane-Matemane LF, Craig A, Kruger R, Alaofin OS, Ware LJ, Jones ESW, et al. Hypertension in sub-Saharan Africa: the current profile, recent advances, gaps, and priorities. J Hum Hypertens. 2024;(April):1–16.
7. NIMR. Tanzania Steps Surveys Report Ministry of Health and Social Welfare National Institute for Medical in Collaboration With World Health Organization. Natl Instutute Med Res. 2013;1–154.
8. Mfuru GH, Allan JN, Njau A, Ubuguyu O, Malima KY. Using waist circumference as a predictor of hypertension in Manzese, Dar es Salaam: a community-based cross-sectional study, 2023. BMC Public Health [Internet].

2024;24(1). Available from: https://doi.org/10.1186/s12889-024-20556-z
9. Muhihi AJ, Anaeli A, Mpembeni RNM, Sunguya BF, Leyna G, Kakoko D, et al. Prevalence, Awareness, Treatment, and Control of Hypertension among Young and Middle-Aged Adults: Results from a Community-Based Survey in Rural Tanzania. Int J Hypertens. 2020;2020.
10. =Ploth DW, Mbwambo JK, Fonner VA, Horowitz B, Zager P, Schrader R, et al. Prevalence of CKD, Diabetes, and Hypertension in Rural Tanzania. Kidney Int Reports [Internet]. 2018;3(4):905–15. Available from: https://doi.org/10.1016/j.ekir.2018.04.006
11. Mosha NR, Mahande M, Juma A, Mboya I, Peck R, Urassa M, et al. Prevalence, awareness and factors associated with hypertension in North West Tanzania. Glob Health Action [Internet]. 2017;10(1). Available from: https://doi.org/10.1080/16549716.2017.1321279
12. Zubery D. Factors associated with hypertension among employees in arusha city, Tanzania. 2021; Available from: http://41.59.85.213/handle/20.500.12479/1501
13. Katalambula LK, Meyer DN, Ngoma T, Buza J, Mpolya E, Mtumwa AH, et al. Dietary pattern and other lifestyle factors as potential contributors to hypertension prevalence in Arusha City, Tanzania: A population-based descriptive study. BMC Public Health. 2017;17(1):1–7.
14. Statistics NB of, Planning M of F and. The United Republic of Tanzania Dar es Salaam Region Basic Demographic and Socio-Economic Profile Report [Internet]. 2023. Available from: https://www.nbs.go.tz/uploads/statistics/documents/sw-1736799037-07. Dar es Salaam Region Socio-Economic Profile.pdf
15. Esaiyas A, Teshome T, Kassa D. Prevalence of Hypertension and Associate Risk Factors among Workers at Hawassa University, Ethiopia: An Institution Based Cross Sectional Study. J Vasc Med Surg. 2018;06(01):1–6.
16. Aladeniyi I, Adeniyi OV, Owolabi EO, Fawole O, Adeolu M, Goon D Ter, et al. Prevalence, awareness and correlates of hypertension among urban public workers in Ondo State, Nigeria. Online J Heal Allied Sci. 2017;16(3):1–6.
17. Bosu WK. Determinants of Mean Blood Pressure and Hypertension among Workers in West Africa. Int J Hypertens. 2016;2016.
18. Badr HE, Rao S, Manee F. Gender differences in quality of life, physical activity, and risk of hypertension among sedentary occupation workers. Qual Life Res [Internet]. 2021;30(5):1365–77. Available from: https://doi.org/10.1007/s11136-020-02741-w
19. Buford TW. Hypertension and aging. Ageing Res Rev [Internet]. 2016;26:96–111. Available from: http://dx.doi.org/10.1016/j.arr.2016.01.007
20. Jayalath VH, De Souza RJ, Ha V, Mirrahimi A, Blanco-Mejia S, Di Buono M, et al. Sugar-sweetened beverage consumption and incident hypertension: A systematic review and meta-analysis of prospective cohorts. Am J Clin Nutr [Internet]. 2015;102(4):914–21. Available from: https://doi.org/10.3945/ajcn.115.107243
21. Zhao Y, Feng Y, Zeng Y, Di W, Luo X, Wu X, et al. Sugar intake and risk of hypertension: a systematic review and dose–response meta-analysis of cohort and cross-sectional studies. Crit Rev Food Sci Nutr [Internet]. 2024 Oct 13;64(26):9483–94. Available from: https://doi.org/10.1080/10408398.2023.2213330
22. Roerecke M, Kaczorowski J, Tobe SW, Gmel G, Hasan OSM, Rehm J. The effect of a reduction in alcohol consumption on blood pressure: a systematic review and meta-analysis. Lancet Public Heal [Internet]. 2017;2(2):e108–20. Available from: http://dx.doi.org/10.1016/S2468-2667(17)30003-8
23. Rehm J, Roerecke M. Cardiovascular effects of alcohol consumption. Trends Cardiovasc Med [Internet]. 2017;27(8):534–8. Available from: http://dx.doi.org/10.1016/j.tcm.2017.06.002
24. Roerecke M, Tobe SW, Kaczorowski J, Bacon SL, Vafaei A, Hasan OSM, et al. Sex-specific associations between alcohol consumption and incidence of hypertension: A systematic review and meta-analysis of cohort studies. J Am Heart Assoc. 2018;7(13).
25. Jiang SZ, Lu W, Zong XF, Ruan HY, Liu Y. Obesity and hypertension. Exp Ther Med. 2016;12(4):2395–9.
26. Dimitriadis K, Tsioufis C, Mazaraki A, Liatakis I, Koutra E, Kordalis A, et al. Waist circumference compared with other obesity parameters as determinants of coronary artery disease in essential hypertension: A 6-year follow-up study. Hypertens Res. 2016;39(6):475–9.
27. Gupta R, Rastogi P, Sarna M, Gupta VP, Sharma SK, Kothari K. Body-mass index, waist-size, waist-hip ratio and cardiovascular risk factors in urban subejcts. J Assoc Physicians India [Internet]. 2007;55:621–7. Available from: http://europepmc.org/abstract/MED/18051732

Implementation of National Framework for Point of Care Testing for HIV Rapid Testing services in Tanzania 2017–2024: The Pivotal Role of the United States of America Government Funding Mechanisms.

Yohanes Msigwa [1*], Ruth Ngowi[1], Mary F. Mtui[2], Zubeda Salum[2], Amedeus Mushi[2], Fahamu Bilohe2, Omary Mbwambo[3], Zeye Masunga[4], Emmanuel Mihayo[4], Regnald Julius[5], Ferdinand Matata[6], POCT Framework Implementation Group[7], Syabo M. Mwaisengela[1], Mbwana Degeh[1], Omary Nassoro[1], Erick Kinyenje[1], Laura Marandu[1], Radenta Bahegwa[1], Chrisogone German[1], Joseph Hokororo[1], Eliudi Eliakimu[1]

***Corresponding Author:** Yohanes Msigwa;email:ymsigwa@gmail.com

ABSTRACT

Introduction: The Ministry of Health (MoH) in October, 2017 developed the "National Framework for Point of Care Testing Certification, First Edition, October 2017" (herein referred to as POCT Framework, 2017), which focuses on Human Immunodeficiency Virus (HIV) rapid testing (RT) sites in health facilities. It was developed in line with the Health Laboratory Practitioners Act, 2007 which requires testers to be licensed; and also, in line with the World Health Organization (WHO) guideline of 2015. Nevertheless, the implementation has not been audited since its inception in 2017. This paper therefore, aims at reporting the implementation successes of the National POCT Framework from October, 2017 to December, 2024. It will indicate the pivotal role of the funding from USA provided to the MoH, various Development Partners (DPs) and Implementing Partners (IPs) in the achievements.

Methods: A review of implementation reports of auditing on HIV Rapid Test (HIV RT) sites and licensing of non-laboratory testers from October, 2017 to December, 2024 was done to assess the activities implemented, funding sources, and implementing organization(s). The review included a detailed document analysis, examining the scope of activities carried out by MoH, DPs and IPs along with their respective funding sources. The WHO "Stepwise Process for Improving the Quality of HIV Rapid Testing (SPI-RT) Checklist" was adopted for quality standards monitoring and evaluation. Compliance with quality standards was categorized into five levels as follows: level 4 (score of 90% or more), meaning a high level of compliance, hence eligible for national certification; level 3 (80–89%), close to national certification; level 2 (60–79%), partially eligible for national certification; level 1 (40–59%), needs improvement in specific areas; and level 0 (<40%), needs improvement in all quality standards.

Results: External audits for site certification were conducted to 7,611 sites in 4,872 health facilities across 26 regions. Among the audited sites, 59 (1%) scored level 0; 278(4%) scored level 1; 1231 (16%) scored level 2; 1133 (16%) scored level 3; and 4907 (64%) scored level 4. Total of 25,064 non-laboratory testers were assessed, whereby 16,890 (67.4%) successfully passed the competency assessment, and 16,399 (97.1%) among those who passed competency assessment were licensed.

Conclusions: The implementation of the National POCT Framework from October, 2017 to December, 2024 through the support of DPs, IPs and MoH using Government of Tanzania and PEPFAR funds was successful. This included significant increase in the quality of HIV RT sites scoring level 4 attaining the national certification category and high proportion among non-laboratory testers passing successfully competence assessment of which majority of them were licensed. Therefore, we recommend that the Government of Tanzania need to allocate more resources for these initiatives through the MoH (HQAU, HLPC, NASHCoP), PORALG, RHMTs and CHMTs and health facilities. Also, we request the USA Government to continue funding the implementation of POCT Framework in order to enable the country to attain the global ambition to end HIV/AIDS by 2030.

INTRODUCTION

The Ministry of Health (MoH) in October, 2017 developed the "National Framework for Point of Care Testing Certification, First Edition, October 2017" (herein referred to as POCT Framework, 2017), which focuses on Human Immunodeficiency Virus (HIV) rapid testing (RT) sites in health facilities [1]. The framework was developed in line with the Health Laboratory Practitioners Act, 2007[2], which requires testers to be licensed; and also, it was developed in line with the World Health Organization (WHO) guideline of 2015 [3]. The development process and its implementation (since March, 2017) has been done in collaboration with various stakeholders including Development Partners (DPs) and Implementing Partners (IPs) with funding support from the United States of America (USA) Government [4]. Nevertheless, the implementation has not been audited since its inception in 2017.

However, the POCT Framework, 2017 implementation has been interrupted since January 2025. As on 20th January, 2025 the President of The USA signed an Executive Order to put a "90-day pause in United States foreign development assistance for assessment of programmatic efficiencies and consistency with United States foreign policy" [5]. Also, on 24th January, 2025 the United States Agency for International Development (USAID) issued a "Notice on Implementation of Executive Order on Reevaluating and Realigning United States Foreign Aid" [6] and the USAID-Tanzania on 27th January, 2025 issued a letter with Subject: "Stop-Work Order and Award Suspension Notice" to "IPs and Contractors "

This paper therefore, aims at reporting the implementation successes of the National POCT Framework from October, 2017 to December, 2024. It will indicate the pivotal role of the funding from USA Government provided to the MoH, various DPs and IPs in the achievements registered so far; and comment on need for its sustainability in the context of the Executive Order on the "90-day pause in United States foreign development assistance"; the "Notice on Implementation of Executive Order"; and the "Stop-Work Order" Impact.

METHODS

A review of implementation reports of auditing on HIV RT sites and licensing of non-laboratory testers was done in January 2025 covering a period of 8 years (i.e., from October, 2017 to December, 2024). The review was done to assess the activities implemented, funding sources, implementing organization(s), key outputs and geographic coverage in which the activities were implemented. The review included a detailed document analysis, examining the scope of activities carried out by MoH, DPs and IPs along with their respective funding sources. Additionally, the contribution of these activities upholding the quality of HIV RT services was evaluated. The WHO "Stepwise Process for Improving the Quality of HIV Rapid Testing (SPI-RT) Checklist" was adopted for quality standards monitoring and evaluation. Compliance with quality standards was categorized into five levels as follows: level 4 (score of 90% or more), meaning a high level of compliance, hence eligible for national certification; level 3 (80–89%), close to national certification; level 2 (60–79%), partially eligible for national certification; level 1 (40–59%), needs improvement in specific areas; and level 0 (<40%), needs improvement in all quality standards. Furthermore, the authors reflected on the implications of the pause in USA funding on the sustainability of the interventions considering its effect for ongoing and future program implementation.

RESULTS

List of Supporting Organizations and Regions Supported

The implementation of activities under the POCT Framework 2017 has been carried out by various organizations (DPs, IPs and MoH) through cooperative agreements as shown in Table 1. Under MoH, implementation was through the Cooperative Agreement (CoAg) between the MoH and the United States – Centers for Disease Control and Prevention (US-CDC) funded by the U.S – President's Emergency Plan for AIDS Relief (PEPFAR) referred to as MoH-CDC/PEPFAR CoAg. The following activities were implemented through various organizations:

i. Development and review of the National Framework for POCT 2017;
ii. Dissemination of the National Framework for POCT 2017;
iii. Training of HIV RT site auditors and evaluators;
iv. Training of non laboratory testers;
v. Sensitization meetings to Regional Health Management Teams (RHMTs), Council Health Management Teams (CHMTs), MoH divisions/ section and professional councils, President's Office – Regional Administration and Local Government (PORALG), and to DPs and IPs;
vi. Conducting site selection, gaps identification and mentorships on HIV RT sites;
vii. Conducting external auditing of HIV RT sites;
viii. Conducting supportive supervision on the quality of HIV RT services;
ix. Development of Standard Operating Procedures (SOPs) for the tester's licensing process; and
x. Support provision of certificates to HIV RT sites and license to non-laboratory testers.

Table 1: Implementing Partners and Supported Regions

Implementing Partner (IP)	Regions Supported	
	Initially	Currently
Health Links Initiative (HLI)	Shinyanga, Iringa, Mbeya, Njombe, and Songwe	NA
Management and Development for Health (MDH)	Geita, Dar es Salaam,	Dar es Salaam, Tabora, and Kagera and oversight technical assistance
Tanzania Health Promotion Support (THPS)	Kigoma and Pwani and Oversight technical assistance	Kigoma, Shinyanga, Pwani, and Tanga
Amref Health Africa	Simiyu, Mara and Zanzibar	Simiyu, Mara and Zanzibar
Henry Johnson Foundation Medical Research International (HJFMRI)	Mbeya, Songwe, Rukwa, and Katavi	Mbeya, Songwe, Rukwa, and Katavi
ICAP-Tanzania	Mwanza	Mwanza and Geita
Delloite	Njombe, Iringa, Morogoro, Mtwara Lindi, and Ruvuma	Njombe, Iringa, Morogoro, Mtwara Lindi, and Ruvuma
Elizabeth Glaser Pediatric AIDS Foundation (EGPAF)	Kilimanjaro, Arusha, Manyara, Dodoma, and Singida	Kilimanjaro, Arusha, Manyara, Dodoma, and Singida
Henry Johnson Foundation Medical Research International – Tanzania Policy and Defense Force (HJFMRI -TPDF)	All Regions – Health Facilities owned by Tanzania Policy and Defense Force	All Regions – Health Facilities owned by Tanzania Policy and Defense Force
Tanzania Health Promotion Support – Police and Prison (THPS - PP)	All Regions - Health Facilities owned by Police and Prison	All Regions - Health Facilities owned by Police and Prison

Supported Activities from October, 2017 to December, 2024

The implementation of the POCT Framework 2017 is structured into two main arms namely: certification of HIV RT sites which is carried out by the Health Quality Assurance Unit (HQAU); and licensing of non-laboratory testers which is managed by the Health Laboratory Practitioners Council (HLPC).

Over the course of the 8years, several activities have been conducted jointly between DPs, IPs and MoH of Tanzania. The activities aligned with initial goal of the development of POCT Framework 2017; thus spanned from training of HIV RT site auditors and testers' evaluators; sensitization meetings to RHMTs and CHMTs; gaps identification and mentorship to HIV RT sites; internal auditing to HIV RT sites; virtual training on the quality of HIV testing services using project Extension for Community Healthcare Outcomes (ECHO) platform; external auditing to HIV RT sites in all regions; evaluation of testers; development of SOPs for tester's licensing process; support provision of certificates to HIV RT sites and licence to testers; and review of the POCT Framework 2017.

Implementation of Certification of HIV RT Sites - Status from October, 2017 to December, 2024

During this period, the MoH monitored compliance with quality standards for HIV RT services through systematic on-site audits of HIV RT sites using a monitoring checklist adapted from the WHO "Stepwise Process for Improving the Quality of HIV Rapid Testing (SPI-RT) Checklist". The period from October 2017 to February, 2018 was utilized mainly for working arrangements and activities planning taking into account the Tanzanian fiscal year (July-June) and the USA funding year (October-September). From March, 2018 to December, 2024, external audits were conducted to 7,611 HIV RT sites in 4,872 health facilities across 26 regions. Based on WHO SPI-RT checklist grading scores for quality standards, out of the 7,611 HIV RT sites, 59 (1%) scored level 0; 278(4%) scored level 1; 1231 (16%) scored level 2; 1133 (16%) scored level 3; and 4907 (64%) scored level 4. Results in each year are as shown in Table 2. All sites that achieved Level-4 were awarded certificates by the MoH.

Table 2: Implementation of Certification of HIV RT Sites - Status from October, 2017 to December, 2024

Tanzanian Fiscal Year (01 July – 30 June) of Implementation	HFs	Councils	Level 0	Level 1	Level 2	Level 3	Level 4	Total RT Sites
2017/2018	21	13	8	14	72	36	17	147
2018/2019	59	15	4	47	119	45	4	219
2019/2020	79	56	32	131	158	44	23	388
2020/2021	215	101	0	10	64	97	321	492
2021/2022	560	133	1	8	74	162	577	822
2022/2023	1754	159	7	48	444	455	1541	2495
2023/2024	1087	176	4	8	135	158	1145	1450
2024/2025	1097	168	3	12	165	136	1279	1598
Grand total	4,872	821	59	278	1,231	1,133	4,907	7,611

Implementation of licensing of HIV non-laboratory testers - status from October, 2017 to December, 2024

A total of 25,064 health care workers who are not laboratory personnel were evaluated for competency in providing HIV RT services. Among them; 16,890 non-laboratory testers successfully passed the competency assessment, and 16,399 (97.1%) were license as shown in Table 3.

Table 3: Implementation of Licensing of HIV RT Testers - Status from October, 2017 to December, 2024

Implementation Period (January – December)	Trained	Evaluated	Licenced
2017	Not Applicable	Not Applicable	Not Applicable
2018	973	486	327
2019	4928	3733	1966
2020	7293	3794	2172
2021	5684	3497	2348
2022	6349	4843	3544
2023	4932	4323	3274
2024	4552	4388	3259
Grand total	34,711	25,064	16,890

N.B: Not all trained testers are evaluated, e.g., trainees did not complete all training modules, trainees failed to attend competency assessment.

DISCUSSION

Implementation of the POCT Framework 2017 has shown significant improvement over the years as indicated by the number of HIV RT sites that achieved level 4 and number of testers who were licensed. This implies that there is significant improvement in the provision of HIV RT services. This has been a result of the combined efforts and interventions by MoH, PORALG, DPs, IPs, RHMTs and CHMTs. The gaps noted in the literature [4] as well as gaps identified during the competency assessment of non-laboratory testers, internal and external audits have been worked by applying improvement efforts through supportive supervisions by RHMTs and CHMTs in collaboration with the IPs. The improvement signifies the pivotal role which the funding from the USA Government has on our Tanzania health system [7].

Given the Executive Order on "90-day pause in United States foreign development assistance for assessment of programmatic efficiencies and consistency with United States foreign policy" [5]; and the "Notice on Implementation of Executive Order on Reevaluating and Realigning United States Foreign Aid" [6]; as well as the USAID-Tanzania letter with Subject: "Stop-Work Order and Award Suspension Notice" to "IPs and Contractors

"; it is critical to reimaging the continuity and sustainability of implementation of the POCT Framework 2017.

CONCLUSIONS

The implementation of the National POCT Framework from October, 2017 to December, 2024 through the support of DPs, IPs and MoH using Government of Tanzania and PEPFAR funds was successful. This included significant increase in the quality of HIV RT sites scoring level 4 attaining the national certification category and high proportion among non-laboratory testers passing successfully competence assessment of which majority of them were licensed. Therefore, we recommend that the Government of Tanzania need to allocate more resources for these initiatives through the MoH (HQAU, HLPC, NASHCoP), PORALG, RHMTs and CHMTs and health facilities. Also, we request the USA Government to continue funding the implementation of POCT Framework in order to enable the country to attain the global ambition to end HIV/AIDS by 2030 [8].

ACKNOWLEDGEMENTS

We would like to thank the Government of the USA for funding all the activities for the implementation of the "National Framework for Point of Care Testing Certification, First Edition, October 2017". We also thank all DPs and IPs for supporting the implementation of the framework. We also, thank all site auditors and evaluators for their tireless efforts and all the HIV RT testers for their excellent work in providing the services to their clients.

AUTHOR DETAILS

[1]Health Quality Assurance Unit, Ministry of Health, Dodoma, Tanzania.
[2]Health Laboratory Practitioners Council, Ministry of Health, Dodoma, Tanzania.
[3]National Public Health Laboratory, Dar es Salaam, Tanzania.
[4]National AIDS, STIs, and Hepatitis Control Program, Ministry of Health, Dodoma, Tanzania.
[5]Diagnostic and Health Care Technical Services Unit, Ministry of Health, Dodoma, Tanzania.
[6]President's Office Regional Administration and Local Government, Dodoma, Tanzania.
[7]The Group includes Regional Laboratory Technologists (RLTs) in all 26 regions: Warda M. Kaita (Arusha), Constantine A. Mnzava (Dar es Salaam), Garadina H. Challe (Dodoma), Mateso C. Andrea (Geita), Iringa (Julius J. Kihengu), Emanuel E. Mkumbo (Kagera), Joseph P. Nkana (Katavi), Shikabwe Msafiri (Kigoma), Rahel M. Mkandya (Kilimanjaro), Julius S. Mwansimba (Lindi), Robert A. Makala (Manyara), Joseph B. Mulebele (Mara), Violeth P. Mbawala (Mbeya), Elbert M. Mtembei (Morogoro), Edward E. Ngonyani (Mtwara), Julius J. Shigella (Mwanza), China A. Mbilinyi (Njombe), Shukuru J. Kimaro (Pwani), Marykiada Mwanji (Rukwa), Said A. Kaunde (Ruvuma), Emmanuel R. Samwel (Shinyanga), Charles Mahongo (Simiyu), Lussa S. Kitiku (Singida), Leonce V. Paul (Songwe), Bonavetura D. Makingi (Tabora), Ussi K. Ussi (Tanga); Regional HIV Testing Services Focal (RHTS FP) in all 26 Regions: Beatrice Ngongi (Arusha), Spitler Makey (Dar es Salaam), Mary Chongola (Dodoma), Felister Kimaro (Geita), Nuru Mhagama (Iringa), Dr Martin Mjuni (Kagera), Elly Daudi (Katavi), Elias Masunzu (Kigoma), Oliva Malya (Kilimanjaro), Dr Alex Hamisi (Lindi), Fredy Kasase (Manyara), Felix Mtaki (Mara), Blandina Nashokigwa (Mbeya), Merabi Malugu (Morogoro), Dr Lilian Kirangi (Mtwara), Flora Masanja (Mwanza), John Pesha (Njombe), Pamela Meena (Pwani), Teddy Swallo (Rukwa), Paulo Dinginyeki (Ruvuma), Betty Shayo (Shinyanga) Dr Mwanaidi Churu(Simiyu), Lussa Kitiku (Singida), Brown M Kavindi (Songwe), Fred Mganga (Tabora), Sharifa Chomoza (Tanga); Regional Laboratory Advisors from IPs: MDH (Kelvin Kaberege, Abubakari Mariri and Ramadhani Pupwa); Delloite (Onna Panga, Paul Mayeka, Goodluck Kyando, George Witulo, Furaha Lema and Kiming'ati Somei);
Amref Health Africa (Meshack P. Levi, Asteria K. Bwire, Ester E. Mmari and Sylvester I. Kezilahabi); HJFMRI (Jeofrey Ndondole, Emmanueli Lalata and Victor Simon); ICAP-Tanzania (Fatuma Maliki Hassan and Adallah Babiya); THPS (Lusekelo Mwambebule, Irene Maseke, Izrael Mtafya, Leah Mseke); EGPAF (Abdul Mpanga, Abel Kingia, Annamary Malima, Musa Msiganga and Fadhili Nyalusi); Team leads: David Temba (Deputy Director of Diagnostic Services – MDH), Solomoni Mwaigwisya (Laboratory Project Manager-MDH), Cosmas Muya (Senior Laboratory Officer-MDH), Magreth Antony (Senior Laboratory Officer-MDH); Musa Maganga (Senior Technical laboratory Advisor – Delloite); Denis Haule (Senior Technical Laboratory Advisor-EGPAF); Eliasi Manyama (Senior Technical Laboratory Advisor - Amref Health Africa; Felix Manda (Senior Technical Laboratory Advisor Laboratory -HJFMRI; Nickolaus Mbilinyi (Senior Technical Laboratory HVL/EID– HJFMRI; Anyelwisye Kabuje (Laboratory Advisor Quality assurance– HJFMRI), Melanjton A. Muyenze (Laboratory Advisor-HJFMRI TPDF), Elizaberth Mghase (Program Officer-HJFMRI TPDF),
Mackdonald Mahiti (Technical Advisor Laboratory Services – ICAP; Okumu Were (Senior Technical Laboratory Advisor Laboratory – THPS); and Abraham Benson (Assistant Senior Technical Laboratory Advisor Laboratory – THPS), Peter Pascal Mabuye (Laboratory and supply chain advisor- THPS Police and Prison); Alex John Ntamatungiro (Health Scientist-HLI), and Elice Joseph Mesanga (HIV RTCQI Project coordinator-HLI).

MUHTASARI

Utekelezaji wa Kiunzikazi cha Kitaifa cha Utoaji Leseni kwa Wapimaji na Cheti kwa Maeneo ya Upimaji wa VVU kwa Kipimo cha Haraka nchini Tanzania, 2017–2024: Mchango Mkubwa wa Ufadhili wa Serikali ya Marekani

Yohanes Msigwa [1]*, Ruth Ngowi[1], Mary F. Mtui[2], Zubeda Salum[2], Amedeus Mushi[2], Fahamu Bilohe2, Omary Mbwambo[3], Zeye Masunga[4], Emmanuel Mihayo[4], Regnald Julius[5], Ferdinand Matata[6], POCT Framework Implementation Group[7], Syabo M. Mwaisengela[1], Mbwana Degeh[1], Omary Nassoro[1], Erick Kinyenje[1], Laura Marandu[1], Radenta Bahegwa[1], Chrisogone German[1], Joseph Hokororo[1], Eliudi Eliakimu[1]

***Kwa Mawasiliano:** Yohanes Msigwa; email:ymsigwa@gmail.com

Utangulizi: Mnamo Oktoba, 2017 Wizara ya Afya (WAF) iliandaa Kiunzikazi cha Kitaifa cha kutoa cheti katika maeneo ya kutolea huduma ya upimaji wa Virusi vya UKIMWI (VVU) kwa kipimo cha haraka pamoja na kutoa leseni kwa wapimaji wa VVU wasiokuwa Wataalam wa Maabara. Kiunzikazi hicho kinajulika kama "National Framework for Point of Care Testing Certification"; Toleo la Kwanza, Oktoba 2017. Aidha, kiunzikazi hiki kiliandaliwa kwa kuzingatia Sheria ya Wataalam wa Maabara za Afya Namba 22 ya Mwaka 2007 ambayo inawataka wapimaji wa vipimo vya maabara wasiokuwa wataalam wa maabara wapewe leseni. Aidha iliandaliwa kuendana na Mwongozo wa Shirika la Afya Duniani wa mwaka 2015 ili kusimamia ubora wa vipimo vya VVU. Hata hivyo, utekelezaji huo haujakaguliwa tangu kuanzishwa kwake mwaka 2017. Kwa hiyo, andiko hili linalenga kupitia utekelezaji wa kiunzikazi hiki kuanzia Oktoba, 2017 hadi Desemba, 2024. Hivyo, litabainisha mchango mkubwa wa ufadhili kutoka Serikali ya Marekani uliotolewa kwa Wizara ya Afya kupitia Wadau wa Maendeleo pamoja na Wadau wa Utekelezaji. Pia litagusia kidogo kuhusu uendelevu wa utekelezaji wa kiunzikazi hiki katika muktadha wa amri ya utendaji ya Serikali ya Marekani iliyosainiwa tarehe 20 Januari, 2025 ambayo ilisimamisha kwa siku 90 misaada ya maendeleo ya nchi hiyo kimataifa ili kupisha mapitio ya miradi ambayo imekuwa inatolewa ili kuona iwapo inaendana na sera za nchi hiyo.

Mbinu: Yalifanyaka mapitio ya taarifa za utekelezaji wa uhakiki wa nje kwenye maeneo ya upimaji wa VVU na utoaji wa leseni kwa wapimaji VVU wasiokuwa wataalam wa maabara kwa kipindi cha kuanzia Oktoba, 2017 hadi Desemba, 2024. Hii iliwezesha kutathmini shughuli zilizotekelezwa, vyanzo vya fedha, mashirika yanayotekeleza. Mapitio hayo yalijumuisha uchambuzi wa kina wa taarifa, kupitia shughuli zinazofanywa na WAF, Wadau wa Maendeleo (DPs), Wadau wa Utekelezaji (IPs), sambamba na vyanzo vya ufadhili. Orodha hakikifu ya Shirika la Afya Duniani (WHO) inayojulikana kwa jina la"Stepwise Process for Improving the Quality of HIV Rapid Testing (SPI-RT) Checklist" ilitumika kwa ajili ya ufuatiliaji na tathmini ya viwango vya ubora. Uzingatiaji wa viwango vya ubora uligawanywa katika ngazi tano kama ifuatavyo: ngazi ya 4 (90% au zaidi), ikimaanisha kiwango cha juu cha uzingatiaji viwango vya ubora, hivyo kustahili kupewa cheti cha kitaifa; ngazi ya 3 (80–89%), ikimaanisha iko karibu kufikia kupata cheti cha kitaifa; ngazi 2 (60–79%), ikimaanisha kwa kiasi inakaribia kufikia kupata cheti cha kitaifa; ngazi ya 1 (40–59%), ikimaanisha kuwa inahitaji maboresho katika maeneo mahususi; na ngazi ya 0 (<40%), ikimaanisha kuwa inahitaji maboresho katika viwango vyote vya ubora.

Matokeo: Uhakiki ulifanyika katika maeneo 7,611 ya kutolea huduma ya upimaji wa VVU kutoka vituo vya kutolea huduma za afya 4,872 katika mikoa 26.

Kwa kuzingatia ngazi za utoaji alama za orodha hakikifu ya Shirika la Afya Duniani inayojulikana kama SPI-RT, kati ya maeneo hayo (7,611); maeneo 59 (1%) yalipata ngazi ya 0; maeneo 278(4%) yalipata ngazi ya 1; maeneo 1231 (16%) yalipata ngazi 2; maeneo 1,133 (16%) yalipata ngazi 3; na maeneo 4,907 (64%) yalipata ngazi ya 4. Aidha, jumla ya wapimaji 25,064 walifanya mtihani wa umahiri ambapo 16,890 (67.4%) walipata alama za ufaulu, 16,399 (97.1%) waliopata alama za ufaulu walipatiwa leseni ya upimaji wa VVU.

Hitimisho: Utekelezaji wa Kiunzikazi cha Kitaifa cha kutoa cheti katika maeneo ya kutolea huduma ya upimaji VVU kwa kipimo cha haraka pamoja na kutoa leseni kwa wapimaji wa VVU wasiokuwa wataalam wa maabara, 2017, kuanzia Oktoba 2017 hadi Desemba, 2024 kupitia Wadau wa Maendeleo, Wadau wa Utekelezaji, na WAF kwa kutumia fedha za Serikali na za Mpango wa Rais wa Marekani wa Kupambana na UKIMWI (PEPFAR) ulifanikiwa. Mafanikio hayo yanajumuisha ongezeko kubwa la ubora kwa maeneo ya upimaji VVU ambayo yalipata ngazi ya 4 na kupatiwa cheti, pamoja na idadi kubwa ya wapimaji VVU wasiokuwa wataalam wa maabara ambao walifaulu mitihani ya umahiri ambapo wengi wao walipatiwa leseni. Hivyo, tunapendekeza Serikali ya Tanzania itenge rasilimali zaidi kwa ajili ya utekelezaji wa kiunzikazi hiki kupitia WAF (Kitengo cha Uhakiki Ubora wa Huduma za Afya (HQAU), Baraza la Wataalam wa Maabara (HLPC), Mpango wa Taifa wa Kudhibiti UKIMWI, Magonjwa ya Ngono na Homa ya Ini (NASHCoP)), Ofisi ya Rais – Tawala za Mikoa na Serikali za Mitaa (OR-TAMISEMI), Timu za Uendeshaji Afya za Mikoa (RHMTs), Timu za Uendeshaji Afya za Halmashauri (CHMTs) na vituo vya kutolea huduma za afya. Pia, tunaiomba Serikali ya Marekani iendelee kufadhili utekelezaji wa Kiunzikazi cha Kitaifa cha kutoa cheti katika maeneo ya kutolea huduma ya upimaji VVU kwa kipimo cha haraka pamoja na kutoa leseni kwa wapimaji wa VVU wasiokuwa Wataalam wa Maabara, 2017 ili kuwezesha Tanzania kufikia lengo la kimataifa la kumaliza VVU/UKIMWI ifikapo 2030.

REFERENCES

1. Ministry of Health, Community Development, Gender, Elderly and Children. National Framework for Point of Care Testing Certification; First Edition, October 2017. Available from: https://www.hlpc.go.tz/NF.pdf

2. The United Republic of Tanzania. Health Laboratory Practitioners Act, 2007. [Section 23]. Available from: https://www.hlpc.go.tz/hlpc_act_22.pdf

3. WHO. Improving the quality of HIV-related point of-care testing: ensuring the reliability and accuracy of test results. December 2015. Available from: https://iris.who.int/bitstream/handle/10665/199799/9789241508179_eng.pdf?sequence=1

4. Ngowi RR, Frumence G. Testers' compliance to the quality standards of HIV rapid testing services in Primary Health Care Facilities in Makete District, Tanzania. Afri Health Sci. 2022;22(2): 46-53. https://dx.doi.org/10.4314/ahs.v22i2.6

5. The White House. Reevaluating and Realigning United States Foreign Aid: Executive Order, January 20, 2025. Available from: https://www.whitehouse.gov/presidential-actions/2025/01/reevaluating-and-realigning-united-states-foreign-aid/?utm_medium=email&utm_source=govdelivery

6. USAID. Notice on Implementation of Executive Order on Reevaluating and Realigning United States Foreign Aid. To: All USAID Contracting and Agreement Officers and Implementing Partners; January 24, 2025. Available from: https://drive.google.com/file/d/1KjEOrhFRzGCXQKVDc0wXWTHLpRIe6Qn4/view

7. Shah N, Crowell TA, Hern J, Anyebe V, Bahemana E, Kibuuka H, et al. The Transformative Impact of the African Cohort Study (AFRICOS) Toward Reaching HIV 95-95-95 Goals in Sub-Saharan Africa. Am J Trop Med Hyg. 2024;112(1):45-55. doi: 10.4269/ajtmh.24-0249. https://doi.org/10.4269/ajtmh.24-0249

8. Joint United Nations Programme on HIV/AIDS (UNAIDS). The path that ends AIDS: UNAIDS Global AIDS Update 2023. Geneva: Joint United Nations Programme on HIV/AIDS; 2023. Licence: CC BY-NC-SA 3.0 IGO. Available from: https://www.unaids.org/sites/default/files/media_asset/2023-unaids-global-aids-update-summary_en.pdf

Jarida la Afya ya Jamii Tanzania, Wizara ya Afya
Issue 14 | July, 2025 | Jarida limesajiliwa: ISSN265-0576