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Tanzania Medical Journal is proud to be collaborating with the Organizing committee of the 2nd National Non-Communicable Diseases Scientific Conference in publishing the proceedings for the conference that was held on 9th - 10th November 2020, at the Julius Nyerere International Convention Center, Dar es Salaam Tanzania. The conference had a theme: "Strengthening Health Systems To Prevent And Control Non-Communicable Diseases In Tanzania". The proceedings are presented along with the abstracts that are listed in clusters as they were presented during the conference, and whenever appropriated first authors affiliation is also listed. The scientific committee for this conference was responsible for peer review of the abstracts.

**OPEN ACCESS JOURNAL**

**TABLE OF CONTENTS**

*ABBREVIATIONS* ..... 3

*ACKNOWLEDGEMENT* ..... 4

*CONFERENCE PROCEEDINGS*..... 7

**Opening session** ..... 7

**Scientific Tracks**..... 7

**Day One – Monday, 9<sup>th</sup> November 2020** ..... 8

**Keynote Speech: NCD Prevention & Control: Dream or Reality** ..... 8

**Panel Discussion 1** ..... 8

**Parallel Sessions** ..... 13

        Session 1A: Health Systems ..... 13

        Session IB: NCDs Risk factors ..... 16

        Session IC: Burden and trends ..... 20

        Session 1D: Prevention and Promotion ..... 24

**Day Two – Tuesday, 10<sup>th</sup> November 2020** ..... 27

**Panel Session 2:** ..... 27

**Parallel Sessions** ..... 30

        Session 2A: Care and Treatment..... 30

        Session 2B: Care and Treatment..... 34

        Session 2C: NCD risk factors ..... 37

        Session 2D: Burden and trends ..... 38

        Session 3A: Multisectoral Approach ..... 42

        Session 3B: Care and Treatment..... 46

        Session 3C: Care and Treatment..... 48

        Session 3D: Innovation and Technologies..... 51

*CONFERENCE RECOMMENDATIONS* ..... 54

*ABSTRACTS PRESENTED AT THE CONFERENCE*..... 56

**Oral Presentations – Day One**..... 56

        Theme: Health Systems ..... 56

        Theme: Ncd Risk Factors..... 62

        Theme: Ncd Burden and Trends ..... 69

        Theme: Prevention And Promotion ..... 74

        Theme: Care And Treatment..... 80

**Oral Presentations – Day Two** ..... 85

        Theme: Ncd Basic Science Research..... 85

        Theme: Ncd Risk Factors..... 89

        Theme: Ncd Burden and Trends ..... 94

        Theme: Multisectoral Approach ..... 99

        Theme: Care And Treatment..... 104

        Theme: Prevention And Promotion ..... 110

        Theme: Innovation And Technologies..... 116

**List Of Posters Presentations** ..... 120

**OPEN ACCESS JOURNAL****ABBREVIATIONS**

DM	Diabetes Mellitus
HAART	Highly Active Antiretroviral Treatment
JKCI	Jakaya Kikwete Cardiac Institute Centre
JNICC	Julius Nyerere International Convention
LMICs	Low- and Middle-Income Countries
MOH	Ministry of Health
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MNH	Muhimbili National Hospital
MUHAS	Muhimbili University of Health and Allied Sciences
NCDs	Non-Communicable Diseases
NIMR	National Institute for Medical Research
NGOs	Non-Governmental Organizations
ORCI	Ocean Road Cancer Institute
TANCDA	Tanzania Non-communicable Diseases Alliance
T2D	Type 2 Diabetes
TDA	Tanzania Diabetes Association
TFNC	Tanzania Food and Nutrition Centre
UNGA	United Nations General Assembly
WDF	World Diabetes Foundation
WHO	World Health Organization

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The 2<sup>nd</sup> Non-communicable Diseases (NCDs) National Scientific Conference was made possible through a strong collaboration between the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), research and training institutions, and NCDs stakeholders. The leading institution which was an appointed chair of the conference, Muhimbili University of Health and Allied Sciences (MUHAS) would like to register its appreciation to the Permanent Secretary in the MoHCDGEC, Prof. Mabula Mchembe on behalf of the ministry for entrusting MUHAS to chair the conference preparation and conduct. MUHAS further thank the Permanent Secretary for being able to set aside his time to attend and officiate the closure of the conference. The University further conveys its gratitude to the Chief Medical Officer, MoHCDGEC, Prof. Abel Makubi who supported the conference, and graciously officiated the opening.

MUHAS is grateful to the National Institute for Medical Research (NIMR) for agreeing to co-chair the conference and taking a frontline role in the preparation and conduct of the conference. In particular, MUHAS would like to convey its gratitude to the NIMR Director-General, Prof. Yunus Mgaya for his leadership and commitment in research and dissemination. His team was exemplary in assisting the organizing committee to reach its targets and goals.

The funding for the 2<sup>nd</sup> NCDs scientific conference was largely provided by the World Diabetes Federation (WDF) through Tanzania Diabetes Association (TDA). The University thanks Prof. Kaushik Ramaiya for his leadership, participation, and collaborative spirit in the fight against NCDs in the country and for his continued support for NCDs activities in the country. Other funders included MoHCDGEC and MUHAS. We extend our gratitude to other institutions including pharmaceutical companies and conference participants for payment of registration and other fees for exhibitions.

The University further recognizes and thanks all the institutions which participated in the organizing committee. They include Ocean Road Cancer Institute (ORCI), Muhimbili National Hospital (MNH), Jakaya Kikwete Cardiac Institute (JKCI), Benjamin Mkapa Hospital, NIMR, Mwanza Interventional Trial Unit, NCDs Prevention and Control Program, Tanzania NCDs Alliance, Tanzania Diabetes Association, and the office of the Regional Medical Officer in Dar es salaam.

MUHAS would also like to thank all those who made the conference possible. These include participants, presenters, chairpersons, rapporteurs, ushers, administrators, MUHAS faculty and students, JNICC staff, drivers, and all who took part in the conference. The conference was a success because of all of them.

Prof. Appolinary A. R. Kamuhabwa

Chairman, Conference Organizing Committee

Deputy Vice-Chancellor, Academic Research and Consultancy, MUHAS

**OPEN ACCESS JOURNAL****BACKGROUND**

The 2<sup>nd</sup> National Non-Communicable Diseases (NCDs) Scientific Conference was convened by the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) through Tanzania NCDs Prevention and Control Program in Collaboration with Muhimbili University of Health and Allied Sciences (MUHAS). The conference was held at the Julius Nyerere International Convention Centre (JNICC) on 9<sup>th</sup> -10<sup>th</sup>, November 2020. This national NCDs scientific conference as among the events for the NCDs week which started on 7<sup>th</sup> November 2020 and ended on 14<sup>th</sup> November 2020 provided the platform for dissemination of research and programmatic findings among different NCDs stakeholders.

The goal of this conference was to provide a forum for researchers, practitioners, decision-makers, representatives of special groups, media and trainers to share experiences and disseminate research findings on NCDs-related issues to relevant stakeholders. About 500 people participated in this conference as participants, presenters, exhibitors, and panellists. They were from the NCDs research community, health care professionals, students, MoHCDGEC, Regional and Local Government Authorities, International organizations, Research institutions, Civil societies and technical experts.

The two-day conference was driven by the main theme “*Strengthening health systems to prevent and control NCDs in Tanzania*”. Through this theme, two key areas were identified under which seven sub-themes drew all the scientists identified two priority areas which were divided into the two days respectively:

1. The fight against NCDs: leveraging on the multisectoral approach to mitigate risk factors and combat the rising tide of NCDs in Tanzania.
2. The impact of rising NCDs burden on health financing in Tanzania: Past experiences, present realities and future solutions.

The two priority areas were further sub-divided into the following sub-themes:

**Conference Sub-themes:****1. Health Systems**

- i. NCDs Information Systems
- ii. Human resources for NCDs Services
- iii. Integration of NCDs with other health Programs
- iv. NCD's Logistics and Supply chain (Essential Drugs and Commodities)
- v. NCD surveillance
- vi. NCD Health insurance and financing
- vii. Universal Health Coverage and NCDs

**2. NCD and Comorbidities in Tanzania (The Burden, Trends and Management)**

- i. Infectious Diseases
- ii. Cancers

**OPEN ACCESS JOURNAL**

- iii. Reproductive Health
- iv. Nutrition
- v. Oral Health
- vi. Cardiovascular and Respiratory diseases
- vii. Diabetes
- viii. Injuries
- ix. Occupational Health
- x. Mental health
- xi. Sickle-cell Disease and other hemoglobinopathies
- xii. Eye health

**3. Prevention and Promotion**

- i. Government Initiatives
- ii. Multisectoral Approach (Agriculture, Industry, Education, Construction, Transport etc)
- iii. Civil Society, Faith-Based and Non-Governmental Organizations (NGOs)
- iv. Development Partners
- v. Health facilities (Private and Public)
- vi. Research and academic institutions
- vii. Media and Communications

**4. Risk Factors for NCDs**

- i. Sociocultural determinants
- ii. Commercial determinants
- iii. Genetics and Environment

**5. Care and Treatment of NCDs**

- i. Diagnostic and curative services
- ii. Counseling services
- iii. Rehabilitation and palliative care
- iv. Challenges in the management
- v. Referral systems
- vi. Role of traditional medicine
- vii. Care and treatment of the vulnerable population (children, pregnant women, elderly, prisoners, mentally and physically challenged individuals)

**6. NCDs Governance**

- i. Policies and guidelines
- ii. Ethics
- iii. Non-health and Multisector Roles in NCD Programmes
- iv. Role of Public-Private Partnership in NCDs Programmes

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- i. Basic science and educational research
- ii. Mobile Health (mHealth)
- iii. Machine learning and artificial Intelligence

**CONFERENCE PROCEEDINGS****Opening session**

The welcome remarks speech was given by Prof. Appolinary Kamuhabwa, the Deputy Vice-Chancellor responsible for Academic, Research and Consultancy at MUHAS. He was also the chairperson of the organizing committee for the conference. He introduced the conference theme, the organization and thanked the MoHCDGEC for providing MUHAS an opportunity to chair the conference on its behalf. He also thanked the committee members who were from all research, training, and service provision institutions as well as the NCDs stakeholders.

The chairperson's remarks were followed by opening remarks from the Vice-Chancellor of MUHAS, Prof. Andrea Pembe. The Vice-Chancellor thanked the guest of honor and the MoHCDGEC, participants, and organizing committee for preparing a well-attended conference. He stressed the MUHAS mandate given by the government as research, training, and consultancy—and that research dissemination remains an important pillar in research. MUHAS remains an important institution working with the government and other research and training institutions to promote the health and welfare of Tanzanians.

The MUHAS Vice-Chancellor invited Prof. Abel Makubi, the Chief Medical Officer (CMO) in the MoHCDGEC to officiate the scientific conference on behalf of the Permanent Secretary. The CMO's address is presented as **Annex 1** in this report. The opening ceremony of the conference concluded with a performance by a *bongo flavor* musician Mr. Lawrence Madole, on two songs made specifically for NCDs.

**Scientific Tracks**

A total of 291 abstracts were reviewed, of which 196 were selected for presentation. Out of the selected 195 abstracts, 72 were oral and 123 poster presentations. These presentations covered several areas on NCDs, including; Health systems, Burden trends and management in Tanzania, Prevention and promotion, Risk factors for NCDs, Care and treatment for NCDs, NCDs governance and Research innovation and technology.

Parallel sessions were conducted in 6 individual conference halls at the JNICC, therefore, managed to attract a wide audience depending on individual preferences. The sessions were conducted in the form of presentations, which were later followed by discussion. Presenters included policymakers, researchers, academicians, private consultants and other stakeholders. This gave sessions a unique advantage of having a multisectoral approach in analyzing and interpreting the research findings.

**Keynote Speech: NCD Prevention & Control: Dream or Reality**

**Presenter:** Prof. Kaushik Ramaiya (Secretary-General for TANCDA & TDA)

**Presentation**

Prof. Kaushik structured his brilliant talk on the tenet of achieving desirable endpoints (dream) viz a viz what has been achieved (reality). He explored the following major domains; Health System & Governance, Health Financing, Service Delivery, Human Resource for Health and availability, affordability, and accessibility of Medical Supplies. He pointed that, there have been many global, regional action plans and strategies to slow down or reverse the growing burden of NCDs; many of these are signed by member states. However, on the ground, the reality is different. The primary health care where we want NCDs to reach has its challenges concerning funding gaps, supply chain, human resources and quality care and took Tanzania as a case example to highlight the challenges.

He said that we have a long way to go, and unless deliberate efforts are made, we will just be in a dream world wanting to do many things but nothing is done on the ground. He ended up by suggesting the way forward for some of the challenges emanating from the gaps between the Dream and Reality.

On Health System and Governance, He pointed out chronic underinvestment in NCDs prevention, early diagnosis, screening, treatment, and rehabilitation. He proceeded to gauge our position against Sustainable Development Goal (SDG) 3.4 (good news, bad news, worrying trends, comparisons between the major NCDs etc.). Further, in the prospect of the upcoming UNGA 2024, he cited the Tanzanian position when considering various mitigating indicators for NCDs risk factors (tobacco taxation-19%, salt/sodium policies-20% etc.).

He briefly pointed out that during the COVID-19 pandemic, people with underlying NCDs were more vulnerable. He went ahead to give WHO-regional comparisons for prioritizing NCDs in terms of governance and health financing where he dwelt on health insurance, out-of-pocket payment and catastrophic expenditures for health common in low- and middle-income countries. To that effect, he also pointed out gaps in service delivery, treatment, human resource for health and supplies of medicine and health products. He concluded by presenting a model with eight critical points for a long-term, forward-looking strategy for NCDs developed by WHO.

**Panel Discussion 1**

Fight against NCDs: Leveraging on the Multisectoral Approach to Mitigate Risk Factors and Combat Rising Tide of NCDs in Tanzania

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**Presenter:** Dr. Mary Mayige (NIMR): MD, PhD-Clinical Epidemiologist, and former member of NCD team, Coordinator of NCD at NIMR (Diabetes).

**Chairperson:** Dr. Grace Magembe

**Rapporteur:** Dr. Nathanael Sirili

**Panellists:**

1. Dr. Tatizo Waane (Jakaya Kikwete Cardiac Institute)
2. Dr. Germana Leyna (Tanzania Food and Nutrition Centre)
3. Dr. Julius Mwaiselage (Ocean Road Cancer Institute)
4. Dr. Wolfgang Shirima (Muhimbili National Hospital)

**Presentation**

The presenter started by presenting the disease burden by age and sex in the year 1990 comparing with 2017. She cited different studies including the one by Dr. Leonard Mboera in 2018 that indicated NCDs were on the rise despite communicable diseases being the leading cause of death in Tanzania by 2015. She added that anaemia was the single most major cause of death in Tanzania. She stated that NCDs are prevalent at all age groups with the peak at the age of 65 years and above. The burden of NCDs by disease category in Tanzania was projected with unintentional injuries contributing 8%. NCDs contribute about 41% of all deaths in Tanzania. She added that 79% of NCDs in Tanzania were not associated with traditional behaviors and metabolic disorders.

She highlighted that, expenditure on NCDs in 2012 to 2016 in Tanzania raised from 55 million USD to 160 million USD. She presented top 10 risk factors for NCDs where she singled out that the main risk factors for diabetes and kidney disease were behaviour-related. The presenter emphasized that high blood pressure is among the leading risk factors for all disabilities combined.

The presenter reiterated that NCDs determinants are shared with poverty-related risk factors. In emphasizing her case she presented the socio-economic determinants of health by Dahlgren and Whitehead in 1991 which put NCDs as an integral part of Social determinants of health. Furthermore, she presented that nowadays, NCDs are becoming prevalent in younger age as well. She provided some statistical evidence showing the cascade of diabetes management whereby in every 100 people at risk, only 63 are tested and 44 are diagnosed. Out of the 44 diagnosed, only 38 start treatment and only 23 continue with care. She also explained the capacity of the health system in Tanzania to treat and manage NCDs. She explained that unlike for many other health care services, the availability of NCDs services is poorer in urban areas compared to rural areas. Furthermore, she stated that the availability of NCDs services was much better in faith-based facilities.

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She added that strengthening the health system will require an integrated approach (building blocks + People centered processes + Outcomes at individual and family levels). Therefore, greater stakeholder engagement was recommended.

**Panel discussion**

Dr. Wolfgang Shirima

***Question 1: How does Muhimbili National Hospital (MNH) incorporate management of geriatrics-related NCDs in its services delivery strategies?***

**Response:**

MNH as the national hospital receives around 50,000 to 60,000 patients per month, among which 20% (10,000) are geriatric patients. Furthermore, about 60% of those are suffering from NCDs like Hypertension, Diabetes Mellitus, Cancers, Mental health, stroke etc. It was further mentioned that although geriatrics is a special group of people as it has multiple comorbidities, we do not have a geriatric specialist in Tanzania. Therefore, MNH has adopted a multi-disciplinary approach to deal with geriatrics cases. In this case, specialists from different disciplines including physicians, counselors, physiotherapists, and occupational therapists are used to manage these patients. As expected, most geriatrics are using multiple drugs which is costly to families, hospitals and the country. For those without insurance and are unable to pay out of pocket, Exemption Policy is used to waiver treatment fees through the established social welfare protocol.

***Question 2: What is MNH doing in addressing challenges for the management of geriatrics with NCDs?***

**Response:**

Management of elderly patients with NCDs are a priority at MNH. For instance, In Urology, over 90% of patients are this age group and therefore urological management is one of the services provided at MNH. Also, geriatric patients with disabilities need a home visit by a trained nurse or physiotherapist. To strengthen human resources for health in the management of geriatrics including those with NCDs, MNH included training of one geriatric specialist in the 5-year strategic plan. However, we have not been able to receive applicants for this slot. One of the main reasons for not getting people interested in studying geriatrics medicine is lack of an institution that offers training in this specialty in Tanzania.

Dr. Julius Mwaiselage

***Question 1: What are you doing as a National referral facility for cancer to support lower level facilities in screening of cancers?***

**Response:**

Majority of cancer patients (70-80%) come with advanced diseases. Therefore, the target is to have patients diagnosed at early stages in order to improve the survival rate among patients. ORCI works with partners to educate the community about cancer. In addition, ORCI has

**OPEN ACCESS JOURNAL**

school programmes focusing on cervical cancer for young girls (using peer-to-peer programmes). The administration of Dar es Salaam Region has also ongoing educational programme on cervical cancer.

**Question 2: As ORCI what are you doing in supporting screening cervical cancer among schoolgirls?**

**Response:**

In Tanzania, vaccination against cervical cancer to school girls aged 9-14 years started in 2017. Currently, the programme is also targeting 14 years girls and those below who were not vaccinated (out of school girls). ORCI as the national referral hospital is expected to provide other health care facilities in Tanzania. Therefore, ORCI plays a key role in facilitating lower level facilities. They support establishment of different cancer screening and health education programmes countrywide. Currently, ORCI is supporting 10 regions in the fight against cancer. If used effectively, screening and health education programmes can help to identify up to 60% of cancers at early stages. In order to effectively manage cancer, there is a need for multi-sectoral collaboration.

Dr. Germana Leyna

**Question 1: What strategies can Tanzania Food and Nutrition Centre (TFNC) put in place to combat childhood obesity?**

**Response:**

The presenter gave background information of obesity and its causes. She mentioned that the first strategy is to start with children, with emphasis on preventing obesity. She explained that TFNC collaborates with 9 multisectoral Ministries in the following areas:

- i. **Education:** Public education to capacitate individuals to make the right decisions on diet for weigh control and management. Also creating awareness of malnutrition and mitigation measures.
- ii. **School feeding programmes:** These programmes are in primary and secondary schools.
- iii. **Food products regulations and policy:** This includes issues related to taxation to food industries. However, emphasis is on personal behavior towards food consumption rather than blaming the industries.

**Question 2: Most of malnourished children come from food basket regions, why this?**

**Response:**

Availability of food is one thing, how it is being consumed is another thing. It is also important to note that variety of foods required as balanced diet may not be readily available in some localities of these regions. It is also not well established on who is taking care of the children to ensure they get the right meals. We also need to assess on who are taking care of these children? This is because some parents are usually busy with economic activities. Also, some parents have life styles such as uncontrolled alcohol consumption and therefore they are not available to properly care for children.

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Dr. Tatizo Waane

***Question 1: How is JKCI empowering regional referral hospitals to minimise referrals to JKCI?***

**Response:**

JKCI is responsible for advanced cardiac related services. If lower-level facilities are strengthened, some patients would have benefited by being managed in the lower level health care facilities. By knowing this fact, JKCI has programmes to support these facilities. The support includes (i) empowering regional referral hospitals by training health care works. Examples of the hospitals that have benefited from this program include Mawenzi, Benjamin Mkapa and Bugando. These trainings include onsite training in the respective hospitals. Another area of support includes screening and treatment camps that are conducted in different regions in the country.

- Screening, train and treat camps

***Question 2: What is the role of JKCI on primary health care?***

Over the years the institute has been greatly involved in various health promotion and preventive activities through the provision of free screening services and education on recommended healthy life styles, how to prevent oneself from developing NCDs and how to handle/ take care of siblings with NCDs among others.

***Question 3: What has JKCI done so far in preparing guidelines for management of NCDs in the lower level health care facilities?***

JKCI has established virtual meetings and presentations for the dissemination of information and capacity building of health care providers in the health care facilities country-wide. Presentations and discussions are done through webinars. Health-related messages to the public are disseminated through different media platforms.

**Closing remarks by the Chairperson of the Session**

After responses from the panellists, the Chairperson of the Session, Dr. Grace Magembe presented the summary of the session. She mentioned that the need for multi-sectoral engagement in addressing the burden of NCDs was emphasized by all panelists, and therefore it should be implemented at all levels. She reiterated the need for engagement of other sectors. Therefore, a national framework is needed in addressing the burden of NCDs. Working together as a team will avoid duplications and will enhance leveraging of resources. We need same agenda and same focus. She acknowledged existence of challenges when working as a team from different sectors. She therefore advised that each sector must play a role in addressing NCDs based on its strength and mandate.

**OPEN ACCESS JOURNAL****Parallel Sessions**

Session 1A: Health Systems

**Chair: Dr. Stella Mpagama****Rapporteur: Dr. Marco Missanga****Presentation 1: Integrating HIV, diabetes and hypertension services in Africa: Study protocol for a cluster-randomized trial in Tanzania and Uganda****Presenter: Sayoki Mfinanga**

He begun with a brief background of his presentation explaining about epidemiological changes of disease patterns in Africa. He elaborated that the programmes for diabetes and hypertension in Africa are weak, and hence contributing significantly to the burden of NCDs. He mentioned that the study was aiming at assessing the effectiveness of the integration of services for diabetes, hypertension and HIV-infection and it involved cluster-randomized trial as a methodology in Tanzania and Uganda. The study enrolled 2275 patients with these major diseases and, the preliminary information from the pilot study involved five health facilities in Tanzania and similarly five health facilities in Uganda. Key findings from this study will be ready next year and local scientific evidence will be generated and applied to make integrations established and scaling up in these countries. He stated some of the challenges which affected implementation of the study including treatment issues and COVID-19 pandemic which affected interactions with different stakeholders. He concluded by suggesting on the use of final findings from this model in re-organization of chronic care services in Africa and specifically Tanzania and Uganda.

**Discussion**

The study pilot was done in Amana and Hindu Mandal Hospitals and there was a maximum cooperation in CTC, diabetes and hypertension clinics. It becomes cumbersome for patients to attend multiple clinics and therefore we are looking forward to integrate these clinics into one, and this appears to be promising. There are a number of vertical clinics ongoing including clinics for these major diseases, however, we understand that the morbidity and mortality for these conditions are different. Social Scientists have been involved as part of this study so as to assist in addressing these challenges.

**Presentation 2: Strategizing to strengthen surgical systems: The development of a National Surgical, Obstetric and Anaesthesia Plan in Tanzania****Presenter: Sarah Maongezi**

She began her presentation by highlighting that about 19% of Tanzanians have access to surgical care which prompted the Ministry of Health to develop National Surgical, Obstetric and Anaesthesia care Plan (NSOAP) so as to ensure access of equitable, safe and timely surgical care. The plan was developed in Mar 2018 with some missions, visions and strategic plan aiming at reducing death from conditions that are amenable to surgical and anaesthesia care including trauma from road traffic accidents, cancers and obstructed labour. She

**OPEN ACCESS JOURNAL**

explained about the development process NSOAP was led by the Ministry of Health in consultation with over 200 representative stakeholders from professional societies, clinical providers, civil society, private and faith-based providers and patient organizations and took about one year to complete. The key priorities of this strategic plan include upgrading all current facilities with equipment and supplies necessary for safe surgery, increasing the surgical workforce density, strengthening referral and hospital information systems, increasing funding for surgical systems and establishing accountability around surgical care at all levels of care.

She concluded by emphasizing that this step has been taken in Tanzania to reduce mortality and is looking for fund to further facilitation so as to increase access to timely care by 2025.

**Discussion**

There were no questions for this presentation however, it was commented that this model looks great and it can be an example in other African countries.

**Presentation 3: Unit costs and its drivers for Diabetes Mellitus, Hypertension and Trauma treated in Emergency department of Muhimbili National Hospital in Dar es Salaam, Tanzania**

**Presenter: Millen Ringo**

Lack of economic evaluation in delivery of services in public hospitals in developing countries in Tanzania and Africa has led to poor resource allocation. This has mainly been attributed lack of awareness by unawareness and lack of expertise in the use of information related to economic evaluation in operating public hospitals. The presenter explained that, this was a cross sectional study which employed both qualitative and quantitative data collection methods. Key findings from this study showed that estimated unit cost for treating diabetes mellitus was higher, followed by hypertension and trauma at the costs of 272,831 TZS, 208,441 TZS and 165,465 TZS, respectively. She concluded by saying that, the unit costs for treating diabetes mellitus, hypertension and trauma at Muhimbili national Hospital is high.

**Discussion**

There should be means to reduce costs for treating these patients from investigation down to treatments and if possible, use of less expensive drugs as most of the patients are paying cash and about 60% of them are unable to afford these medications.

**Presentation 4: Finding the invisible child: A call to action, A case of new born with Critical Congenital Heart Disease**

**Presenter: Naizihijwa Majani**

The presenter started by elaborating that Congenital Heart Diseases (CHD) are the leading causes of birth defects worldwide, occurring in up to 9/1000 births and nearly 25% of CHD are described as Critical Congenital Heart Disease (CCHD), requiring early diagnosis and

**OPEN ACCESS JOURNAL**

intervention to prevent mortality. Tanzania through JKCI operated over 1000 children with CHD since 2015 however, some of the challenges include late presentations of children with CHD which leads to complications, suboptimal results, and at times impossible to intervene situation. This study was conducted to determine the magnitude, associated factors, and outcome of CCHD among new-borns in a Tanzanian.

In conclusion, she said that critical congenital heart diseases are easily missed at birth and therefore, initiatives should be continued to establish the diagnosis early. She recommended the use of neonatal Pulse Oxymetry in screening for CCHD disease as it is inexpensive and readily available in the country.

**Discussion**

Having normal ECHO does not exclude CHD. The screening of all infants with hypoxia is always done with the use of ECHO and when is found normal, the infant is sent to paediatrician to continue with further investigation for the cause of hypoxia.

**Presentation 5: Clinical impact of a Guideline Implementation Strategy on Breast Cancer Management at National Cancer Referral Centre in Tanzania.****Presenter: Mvungi Nanzoke**

The presenter started by giving details of the burden of cancer in Low Income Countries and explained that Tanzania's Ministry of Health commissioned the country's first National Cancer Treatment Guidelines to standardize treatment for all cancers across the country. The aim of this study is to evaluate the effectiveness of a theory-driven implementation strategy on facilitating uptake of guideline-based practice at ORCI using a within-site, pre-post design focused on breast cancer care. She explained further that the study has two phases, phase I which was a retrospective study and phase II which was a prospective study. A novel methodology for evaluating the clinical effects of a guideline implementation strategy has been developed and, it will be measured in concordance using internationally-recognized quality metrics and the survival of breast cancer patients at ORCI pre- and post-intervention will be evaluated. The presenter added that, results from this study will be presented however, she insisted that improving adherence to standard treatment guidelines is essential and the means of developing guidelines for developing countries such as Tanzania and Africa in general is of paramount importance.

**Discussion**

The risk factors for the breast cancer are not clearly understood and hence it is important to develop such a guideline which has so far received a lot of attention from the Ministry of health and the Permanent Secretary has been pushing to ensure that it is established.

**OPEN ACCESS JOURNAL****Presentation 6: Tanzania health policy gap analysis and its effectiveness in NCD risk factors and inclusion of UHC act towards prevention, care and treatment.****Presenter: Waziri Ndonde**

The presenter began by providing details of the aim of Tanzania Health Policy 2007 which was to improve health for all especially those at risk and increase life expectancy by providing health service that meets the needs of the population in prevention and control of both communicable and non-communicable diseases. Additionally the policy addressed achievements and challenges facing health sector in Tanzania. Tanzania Non-Communicable Diseases Alliance conducted a “gap analysis” study on health systems, policies and stakeholders in relation to NCD prevention, diagnosis and care with the aim of including NCDs in Universal Health Coverage. This is an ongoing project in which all policies and guidelines are being reviewed so as to identify the gaps. Key findings from this review found that NCD and risk factors are included, however, the focus is more on disease than risk factors such as nutrition factor which is overlooked. Additionally, the guideline looks outdated and needs significant improvement. He concluded the presentation by informing the participants that a number of recommendations provided had been put forward.

**Discussion**

Sedentary life style contributes significantly as one of the risk factors for NCDs in the country. As quite a number of Tanzanians now are into sedentary life with physical inactivity as one of the problems, it important to encourage physical activities so as to help in mitigating the disease and lower the prevalence of NCDs down among younger generation. It was also commented that, there is need for revision of the Tanzania health policy guidelines particularly those related to NCDs to fill important gaps and ensure inclusion of NCDs and their risk factors.

Session IB: NCDs Risk factors

**Chairperson: Prof. Said Kapiga****Rapporteur: Dr. Maryam Amour****Presentation 1: H3Africa multi-centre study of the prevalence and environmental and genetic determinants of type 2 Diabetes in sub-Saharan Africa (SSA)****Presenter: Mary Mayige**

Behaviour, genetics and life style were reported to influence Type 2 Diabetes (T2D) and their microvascular complications. The study was done to assess the burden and determinants of T2D in SSA. This case series study was conducted in 11 sites in eight sub-Saharan Africa countries using questionnaire, collected data include biophysical measurements and biological samples. The presenter reported that the study is still ongoing and preliminary findings have been presented. The study will inform health service planning and prevention for T2D. The author recommended to direct more resources in the preventive and therapeutic strategies to control T2D.

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She was asked if there is an agreement between HBA1c, OGTT, FBG: She responded that preliminary data are not yet available, HBA1c is not well evaluated in our area. Another question was asked that if other participants with infections were excluded: she responded that these were excluded in both arms. Also, if gestational diabetes in women is going to be considered, she responded positively that it will be explored as well as where should future risks focus if we want to prevent NCDs

**Presentation 2: Symbolizing diabetes: perceptions and experience of type 2 diabetes risk factors and prevention among communities in Bagamoyo Tanzania****Presenter: Sally Mtenga**

This study aimed to relate personal experiences and cultural beliefs and T2D risk factors and prevention. Convenient sampling method was used and focus group discussions conducted to obtain the behavioural drivers and experiences of T2D. The author reported that the participants were generally knowledgeable about risk factors for T2D, barriers to prevention of T2D include cultural perception and appreciation of salty and oily foods as the common eaten foods, inactivity, limited open spaces for exercises and health seeking barriers. There is an observed discrepancy between the knowledge of risk factors for T2D and practise on prevention.

Author recommended for promotion of healthy lifestyles. These include reduction of sugary, salty and oily foods, education on preventive strategies, emphasis on consumption of healthy foods and improve availability of services for T2D patients.

**Discussion**

The presenter was asked why Bagamoyo was chosen for the study instead of other districts. She responded that TASUBA (Taasisi ya sanaa na utafiti Bagamoyo) was already established with the artists. So, it was convenient to make this initiative and engage with local artists.

**Presentation 3: Prevalence and correlates of cardio-metabolic risk factors among regular street food consumers in Dar es Salaam, Tanzania****Presenter: Gibson Kagaruki**

The study was conducted among the 560 regular street food consumers in Dar es Salaam to determine the prevalence of cardio-metabolic risk factors and their correlates.

The presenter mentioned that on average, the participants consumed 11 street food meals per week per person, the magnitude of cardio-metabolic risk factors was 64% for overweight, 42.5% for raised blood pressure, 13.5% for raised triglycerides, and 6.6% for raised glucose. Female sex, older age, high income and married participants were at an increased risk for obesity/overweight. The author reported that older age was the only factor associated with raised BP, raised glucose and raised triglycerides. It was concluded that street food

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consumers were at a high risk of cardio-metabolic health problems. The author recommended transdisciplinary studies to be conducted to explain root behavioural factors and hence intervene.

**Discussion**

Individuals are often confused and not knowledgeable on portions. They consume a plate of protein, a plate of carbs and plate of fruits thinking it is the healthy lifestyle. However, that is not the way it should be. Inter-disciplinary studies recommend to explore cardio metabolic risks. Both targeted food vendors and consumers have limited knowledge about the requirement food for better health.

He was asked on how data on food was collected and how he could explain why the proportion of population taking vegetables in his study (60%) differed significantly with the statistics (3%) initially provided by Dr. Mary Mayige He reported having used WHO self-survey questionnaire, self-reported. The focus was on food consumers in the business, while the study by Dr. Mary Mayige was in the community. Therefore, the two studies are different.

He was again asked whether he had collected data on occupation of the clients that consumed the street foods from street vendors. He responded that he included business people around the market and the inclusion criteria was that they had to be available for 6 months so it included self-employed people in the markets. One person commented that food frequency questionnaire to measure the portions of what people were taking was useful to understand the context better. He was also asked on how he assessed fasting blood glucose in people in the street. He replied that participants were asked to fast for 8 hours before testing.

Concerning the presence of any current NCDs study in Tanzania since the 2012 Steps survey, the presenter informed the audience that, the next national wide survey is planned for 2021. In addition to his responses, he was insistent on need of not separating foods into vegetables and fruits and people should always analyse the present micronutrients including hidden sugars in vegetables and fruits. We need to assess a complete balanced way of eating. Another member of the audience noted that from the presentation, female sex had an increased risk of obesity and the reasons for that were not provided. The presenter responded that this observation has also been reported in the general population and many factors are implicated including; physiological factors, contraceptive use, involvement in physical activities among others. He was also asked if he had a plan to follow up after three years to correlate the risk for hypertension, Diabetes Mellitus or any other NCDs. He responded that, the study is completed but agreed that, it would have been best to follow up later on and establish the correlation.

**OPEN ACCESS JOURNAL****Presentation 4: Prevalence and factors associated with renal dysfunction among HIV infected children in Dodoma Tanzania****Presenter: Clement Kabakama**

Renal dysfunction has been reported to be common among patients with HIV infection. This study aimed to determine the factors associated with kidney dysfunction in 236 HIV positive children on or not on HAART at Dodoma RRH.

The presenter reported the prevalence to be at 52.5% and 47.5% for boys and girls living with HIV respectively, 39.8% among those below 5 years of age, 91.7% of children with anaemia were found to have renal dysfunction. Anaemia, poor drug adherence and malnutrition were the main factors associated with renal dysfunction in this population, recommendations were made to raise public awareness and encourage children living with HIV to adhere to the medications. He also informed the audience that ART are nephrotoxic and adherence is of paramount importance and his stance was, patients should be assessed of their renal function status before being initiated on ARTs.

**Discussion**

The presenter agreed to further analyse his data by considering the various categories of renal dysfunction. In this presentation, there were still some pending/unanswered concerns that needed further clarifications including; categorization of clients into those on ART for less and above 5 years and controlling confounders like anaemia which is implicated in renal dysfunction.

**Presentation 5: The role of sickle cell trait status on physical activity, glucose and blood pressure in people living with and without HIV in Tanzania****Presenter: Belinda Kweka**

Physical activities were reported to play an important in the reduction of NCDs, but this may be uncomfortable for sickle cell trait (SCT) carriers, as a result leading to higher burden of NCDs among this population. This study has been conducted to establish the role SCT status on physical activity, glucose and blood pressure among HIV positive and negative population in Mwanza.

The presenter summarised that SCT carriage was associated with reduced physical activity among HIV uninfected participants and a higher risk for hyperglycaemia in HIV positive participants. No association was found between SCT and high blood pressure. She recommended larger studies to be conducted to assess long term effects of SCT on diabetes among HIV infected people.

**Discussion**

There were no questions or comments on this presentation.

**OPEN ACCESS JOURNAL****Presentation 6: Risk Factors, clinical patterns and 30-days outcomes of patients with stroke admitted at referral hospitals in Dodoma, Tanzania****Presenter: Anna Chongolo**

This study aimed to describe risk factors, clinical pattern and post stroke outcomes among adult patients in Dodoma as few studies have been conducted to assess the outcomes among stroke patients in the Tanzanian community.

The presenter reported majority of the participants to be hypertensive (88%) and 9% with hypertension and diabetes comorbidity. Majority had ischemic stroke type, commonly affected on the left cortical part of the brain. After 30 days of follow up, 9.7% were reported to have full recovery, 56.9% had recovery with neurologic deficit and 33.33% had died. She reported that stroke outcome was significantly associated with stroke severity as those who presented with loss of consciousness had increased risk of death. She concluded that hypertension and heart failure are the main risk factors for stroke outcomes and more death occurred within the first week after stroke event hence care of acute stroke is vital to prevent mortality.

**Discussion**

Mortality due to stroke in this study is lower than what was reported by Sara Matuja in 2019, which is a good sign. She was asked on the difference in outcome between haemorrhagic/ischemic stroke. She responded that haemorrhagic stroke caused more mortality compared to ischemic stroke. She was asked to explain on how she obtained consent from unconscious patients. She said that next of kin was used to get the consent.

Lastly, the presenter was advised to perform survival analysis since time was not taken into consideration and that, she should consult statisticians for improved analysis.

Session IC: Burden and trends

**Chair: Dr. Nyanda E Ntinginya****Rapporteur: Dr. Irene Jonathan****Presentation 1: Burden of Non-communicable disease comorbidities among people living with HIV in Tanzania: Need for innovation in service delivery****Presenter: Faraja Chiwanga**

The presenter started by highlighting diabetes and hypertension to be common among people living with HIV, which could result to negative health outcomes. Therefore the study aimed to assess how diabetes and hypertension is controlled among HIV positive patients attending CTC in tertiary hospital, Tanzania. In her findings, majority of participants were females, prevalence of diabetes was 3.9%, hypertension prevalence was 26.4%, pre-hypertension was present in 36.9%, 2.2 % had both diabetes and hypertension comorbid with HIV.

She concluded that many HIV patients with DM/hypertension were aware of their comorbid non-communicable conditions, but these conditions were not well controlled hence recommending innovative methods of delivering services to HIV positive patients such as

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integration with NCD services are urgently needed to ensure a holistic approach in care and treatment of those patients.

**Discussion**

The presenter was asked on what innovative approaches can be done to address the burden of NCDs comorbidities among people living with HIV in Tanzania. The response was that there are next phases of this research that will look into different approaches such as the role of family in supporting patients with NCDs through interviewing patient's relatives. She was asked on what sampling method was used, she reported to use systematic sampling method. Another person asked that "compared to the general population, how big is the problem"? She responded that from this study, the prevalence of Diabetes Mellitus was similar to that in the general population while that of hypertension was lower compared to the general population.

**Presentation 2: Burden of modifiable risk factors and prevalence of non-communicable diseases among the community of Dar es Salaam, Tanzania****Presenter: Digna Narciss Riwa**

The presenter reported that NCDs are the leading cause of death worldwide with top four killers being diabetes, cardiovascular diseases, cancers and respiratory conditions. The study was conducted to determine the burden of modifiable risk factors and the prevalence of NCDs among communities in Dar es salaam. Prevalence of DM and HTN was reported to be high, and increases with age, DM was higher in Vijibweni and Temeke while HTN had higher rates in Ubungo. No sex difference in both DM and HTN, however, HTN had strong correlation with weight gain.

By concluding, strategies to improve services in each facility have been done following this study, such as triage to detect HTN and DM and initiate therapy right away, Nutritionists at each facility, community awareness and sensitization through video clips, and also registering NCD patients at each facility for easy of follow up.

**Discussion**

The presenter was asked why there was a difference in prevalence between regions? The response was that this study did not answer such question. It was informed that a subsequent ongoing study is aiming at assessing the factors for such differences.

Another person asked whether there is any training done to patients on how to use themselves-screening cards? She responded that education is given and together with this they have trained community health workers to assist at the community level. It was also asked on what was done for people who were found to be hypertensive or diabetic? It was explained that they were referred to specialized clinics for further assessment, initiation of treatment and follow up.

**OPEN ACCESS JOURNAL****Presentation 3: Obstructive Sleep Apnoea and excessive daytime sleepiness among hypertensive patients attending JKCI-A cross-sectional survey****Presenter: Nsajigwa Misidai for: Pedro Pallangyo**

The presenter highlighted that there is evidence that a complex bidirectional association between Obstructive Sleep Apnoea (OSA) and hypertensive patients exist. It has also been reported that OSA is an independent risk factor for hypertension and cardiovascular-related morbidity. It is also implicated to cause excessive daytime sleepiness, which can cause cognitive dysfunction, mood disorders and accidents. The study aimed to assess the prevalence and associated risk factors for OSA among hypertensive patients. Her findings highlighted that 82.4% of all participants had excess body weight with a mean body mass index (BMI) of 28.0%, diabetes prevalence was 16% and 8% had history of stroke. Diabetes, increased neck circumference and positive family history of OSA were the strongest associated factors and excess body weight proved to be the strongest modifiable risk factor.

The presenter concluded that OSA is common among hypertensive patients attending a tertiary hospital in Tanzania. Positive family history of OSA and excess body weight were strongly associated with hypertension. She recommended a multipronged approach to curb the escalating obesity epidemic in the battle against sleep-related breathing disorders.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 4: Prevalence of non-communicable diseases among individuals with HIV infection by antiretroviral therapy status in Dar es Salaam****Presenter: Basil Tumaini**

He opened the presentation by highlighting the modified clinical course of HIV infection caused by the use of ART, with an increased life expectancy this population is at risk of chronic NCD conditions. The study aimed to determine the prevalence of NCDs and associated factors among HIV positive patients on long term ART in health facilities.

From the findings, majority were females, 25.2% of participants were hypertensive, 17% of those on long term ART reported to be diabetic, overweight/obesity was more in individuals on long term ARTs (>5yrs) compared to treatment naïve patients.

He concluded that Impaired glucose tolerance, DM, hypercholesterolemia and hypertriglyceridemia were associated with long term use of ARTs. Renal impairment was similar between the two groups. Recommendations were made that individuals with HIV infection on long term ART, especially those aged  $\geq 40$  years, require screening for NCDs.

**Discussion**

The presenter was asked if the association observed between long term ART and NCDs can be explained by a particular type of ARTV used. The response was that data for each ARV used was obtained from CTC cards, but there was a lot of missing data. Therefore, the effect of individual or groups of ARVs on the long-term ART and NCDs was not assessed in this

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study. The next question was if he could explain about the high prevalence of obesity in individuals on long term ART while it was found that physical activity was high in this group. He responded that obesity in individuals on long term ART could partly be explained by the use of ARVs, also patients with HIV change their dietary pattern in order to gain weight to mask their HIV status since majority of people associate weight gain with good health. Another participant asked how did they come up with a sample size of 306 in each group. It was explained that a statistical formula was used to calculate the sample size in order to give a power of 80%.

**Presentation 5: Depression, Suicidality and associated risk factors among Police Officers in Urban, Tanzania; A Cross-Sectional study**

**Presenter: Belinda Njiro**

The presenter reported depression to be a disease of public concern as documented by WHO. Police officers are exposed to multifactorial causes that predispose them to depression and suicide including work related factors. She conducted the study to estimate the magnitude of depression, suicidality and their associated risk factors among police officers.

From her findings, she reported the prevalence of depression to be at 19.8% and suicide magnitude to be 15.4%. The risk factors reported include tertiary level of education, low perceived social support and duration of service in the Police force.

She concluded that the levels of depression and suicide among police officers are alarmingly high. Levels of education and perceived social support were found to be associated with depression, high perceived social support was found to be protective among police officers. It was recommended that periodic depression and suicide screening to be done and mental health responsive services should be put in place to prevent and treat depression and suicide among police officers.

**Discussion**

The presenter was asked what exact work-related factors were found to be associated with high prevalence of depression and suicidality. She responded that the available information from police and other sources have no association of work-related factors with either depression or suicide.

The next question was whether the tool allowed to identify if depression/suicidality occurred before or after employment. The response was, yes, they included police officers who have been in service for 5 years, and the questions only focused on the past 2 weeks only and therefore it was the time after employment.

She was asked if she would recommend screening services pre-employment and she responded that screening before employment is important.

**Presentation 6: Patterns and causes of speech sound disorders among patients attending speech therapy clinic at Muhimbili National Hospital**

**Presenter: Amina Hassan**

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The presenter started by characterising speech disorder into organic and functional. She conducted this study to determine the patterns and causes of speech sound disorder among patients attending speech and language therapy clinic at MNH. Children aged less than 5 years were more affected by dysarthria, repetition and addition were commonly found in older patients more than 5 years of age, substitution and distortion were common in the younger participants aged less than 5 years. She concluded that speech sound disorder is a problem especially in school age children. In adult's organic speech disorder is seen to be common, mainly due to stroke and traumatic brain injury. Functional speech sound disorder is seen more in children.

Recommendations were mainly emphasis on routine screening of Speech Sound Disorder to the community for early diagnosis and treatment and also monitoring of at-risk groups like those with stroke, traumatic brain injury and sensorineural hearing loss.

**Discussion**

The presenter was asked about the treatment strategies for speech sound disorders that are available at MNH. She responded that the study did not look at treatment strategies. However, strategies available includes vocabulary training, pictures, toys etc.

Session 1D: Prevention and Promotion

**Chair: Dr. John Meda**

**Rapporteur: Dr. Maryam Hamad**

**Presentation 1: The impact of NCD is beyond the health sector where are the religious leaders.**

**Presenter: Frank Manase**

The presentation started by a brief explanation of the increasing burden of NCDs in Tanzania and the world at large. He explained that besides the increasing incidence of non-communicable diseases in Tanzania which is affecting people of all social economic status, there is no evidence on the effective ways of cooperating with religious leaders which causes a barrier towards advancing NCDs control strategies. He narrated that religious leaders and their congregations have important role in implementing NCDs preventive measures. This study was conducted to establish evidence on engaging religious leaders in addressing the burden of NCDs and was mainly done through focus group discussions. Key findings from this study included that, patients have more trust to religious leaders than health care workers as they spend more time with them compared to health care workers. Additionally, a large number of patients who are non-compliance to medication are going to religious leaders for consultation. Religious leaders have the potential role that is yet to be explored in the global efforts to address the burden of NCDs. It was recommended that there is a possible potential to work collaboratively with religious leaders in order to reverse the unwanted health outcomes of NCDs and hence, it is time to get them empowered.

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There were no questions or comments for this presentation.

**Presentation 2: A randomized placebo-controlled double-blind phase 2 trial to determine the effects of metformin versus placebo on glycaemia in HIV-infected persons with pre-diabetes in Tanzania.****Presenter: Sokoine Kivuyo**

The presenter first explained recent statistics on the prevalence of type two diabetes and he further mentioned that 10-20% of subjects with prediabetes progress to clinical diabetes each year, and majority of these individuals can go on to develop overt diabetes during their lifetime. Metformin has been a recommended first-line drug for persons with diabetes and HIV-infection in the UK, Africa and elsewhere. However, based on existing evidence it is believed that metformin is safe for use in HIV-infected individuals on ART who have pre-diabetes. This study is a phase II randomised double-blind placebo-controlled trial to evaluate the use of metformin in HIV-positive persons on ART with pre-diabetes. Metformin has shown reduction in progression by 31-60% in non-HIV adult population and it was used in this study because it is cheap and easily available. The study is still ongoing and a comparison of mean glycaemia between the metformin and control arm at 12 months in an intention-to-treat analysis will be done. Secondary endpoints will include changes in glycaemia from baseline, incidence of adverse events, rates of retention in care and estimated adherence to study drugs. He concluded the presentation by saying that, this current phase II safety trial will generate the data needed to design a phase III trial. He also recommended that all HIV infected people should be investigated for diabetes mellitus.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 3: Vitamin B12 is low in milk of early postpartum women in urban Tanzania, and was not significantly increased by high dose supplementation****Presenter: Omar Lweno**

The presenter started by explaining the effect of maternal multivitamin supplementation on breast milk vitamin B12 concentrations which has not been examined in Tanzania and is shown to be in low concentration. He elaborated that the effects of maternal multivitamin supplementation on breast milk has not been examined in Tanzania. The prevalence of maternal vitamin B12 insufficiency in plasma has been reported to be 25.6% and, in this study Vitamin B12 was used because it is one of the essential micronutrients important for the development of the foetus. A single unit increase in maternal haemoglobin at every six weeks is associated with 18% lower odds of inadequate vitamin B12 in breast milk. Determination of breast milk vitamin B12 concentration was the best way to measure vitamin B12 insufficiency due to the fact that in serum, haemodilution, transport of protein and

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hormonal changes may interfere with vitamin B12. He explained that the next study will be conducted to measure vitamin B12 using serum from the foetus and if it will show a good outcome, vitamin B12 will be given during vaccination time, during antenatal visit, or together with iron supplements. In conclusion, the study found that breast milk vitamin B12 insufficiency is a problem of high clinical significance. The presenter recommended that trials to determine the optimal dose, route, and duration of supplementation to improve maternal vitamin B12 status in Sub-Saharan Africa are of utmost importance.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 4: Uptake of cost-free Hepatitis B vaccination among healthcare workers in northern Tanzania****Presenter: Elichilia Shao**

The presenter started by highlighting the background of the presentation in which he explained that WHO and other global agencies recommend all health care workers to get vaccinated against the hepatitis B virus before enrolment to clinical work. However, there is limited data in low-income countries on hepatitis B vaccination coverage among health care workers which hinders the WHO Hepatitis B Elimination Strategy 2016-2021. He explained that this study was aimed to determine the prevalence of hepatitis B vaccination uptake and associated factors among health care workers from a tertiary and teaching hospital in Northern Tanzania. He highlighted the key points of his presentation which were; hepatitis B virus infection is preventable and hence WHO recommend all health care workers to get vaccinated for Hepatitis B. Findings from this study show that among those who received Hepatitis B vaccine only 70.5% received 3 shots, 19.5% received 2 shots and 10% received only 1 shot. He concluded by saying that, there was a knowledge gap on Hepatitis B among health care workers with non-surgical health care workers more likely to take vaccination than surgical health care workers. Recommendations from the study are to ensure that hepatitis B vaccination as a pre-employment requirement for health care workers as well as doing antibody titer post-vaccination for none-responders. The strategic plan is to give vaccination to all students before joining medical schools and to continue educating them through the provision of information before vaccination.

**Discussion**

There were no questions or comments for this presentation

In this session, two presentations which were (i) *'Physical activity practices and associated factors among university students in Kilimanjaro region, northern Tanzania'* and (ii) *'Effectiveness of peer support learning strategy on improving self-care competence and health outcomes among adult diabetic patients in referral hospitals of Dodoma Region: A Quasi-Experimental study'* were not presented.

**Panel Session 2:**

The Impact of Rising NCD Burden on Health Financing in Tanzania: Past Experiences, Present Realities and Future Solutions

**Presenter: Mr. Tumainieli Macha**

**Chairperson:** Prof. Mohamed Bakari Kambi

**Rapporteur:** Dr. Lwidiko Edward

**Panelists:**

- |                         |   |
|-------------------------|---|
| i. Prof. Andrew Swai    | – President of Tanzania Diabetic Alliance |
| ii. Dr. David Mwenesano | – Director of Medical services, NHIF      |
| iii. Dr. Samweli Ogillo | – Private Health Sector Financing         |
| iv. Dr. George Ruhago   | – Health Economist MUHAS                  |

***Opening Remarks by Prof Bakari:***

The burden of NCD is emerging and it is important to discuss it, in relation to present realities and we have to discuss solutions in hand. Health financing's core goal is to make funding available as well as to set right financial incentives to providers to ensure that all individuals have access to public health and healthcare.

Financing can be divided into the following categories:

- i. Making health services available through human resources, infrastructure, essential medicine and equipment. This is mainly done by the government, foreign fund and co-financing with end users.
- ii. Making the health services accessible to people through pre-paid schemes like health insurance, out-of-pocket financing or exemption for people who cannot afford.

In the past, the allocation of finances by the government was inadequate in the health sector. For instance, the health budget in 2018/2019 was 1.7 trillion and increased to 2.1 trillion in 2020/2021.

The health budget traditionally has been donor-funded, but the current trend is such that foreign aid is fluctuating and getting lower. The fifth-phase government has been allocating more money from local sources to cater for health financing. For NCDs specifically, there is an increase in financing from the government for infrastructure and equipment.

Cost sharing type of financing (out of pocket financing by individuals) has been shown to increase consistently since 2017. This is due to a low coverage of prepaid services. The current statistics show that only 8% of the population have health insurance through NHIF, 25% for CHF and 1% from other insurance schemes. About 66% of the population has to pay from their sources (out of pocket) to access health services.

The increased prevalence of NCDs brings an added cost for individuals without insurance for diagnosis and treatment. Health commodities used in patients with NCDs are costly. The

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funds collected through the insurance system and out of pocket are not adequate to cater for the majority of the population. There is also a shortage of human resources, equipment and medicines at the primary healthcare level. The increase in NCDs burden and the rapid growth of NCDs morbidity forms the major part of annual expenditure of health insurance fund. For instance, about 44% of the NHIF total expenditure in 2019 was on NCDs and related health problems. Therefore, this trend threatens the sustainability of the NHIF.

**Future Solutions:**

Implementing policy interventions to address NCDs:

- i Allocate more resources at the primary level.
- ii Enhance provision of health education to the public in addressing causes of NCDs. Change the allocation from 75 % in treatment and increase in health education and prevention.
- iii Increase the pool for the health insurance scheme. Since there is a mandatory law for every Tanzanian to enrol in any insurance scheme for Universal Healthcare, this law needs to be enforced.
- iv To include the health insurance benefit package that accommodates NCDs screening services.

**Questions:**

1. *What are potential additional sources of finance for public health facilities to make health insurance financing sustainable: Where, How and Who Must pay for health?*

**David Mwenesano**

Among the top 10 diseases, 4 are NCDs, and with time there is an increase in expenditure in NCDs, and it grows by 135% annually in benefit package, compared to other diseases. Benefit package increased from 9 investigations to 300 or more investigations for NCDs, and currently it includes dialysis, immunosuppressants and more than 17 cancer drugs.

The National Health Insurance Fund (NHIF) has been responding to increase in NCDs burden financing, but it had been overwhelmed. The NHIF urges people to adhere to Standard Treatment Guidelines and essential medicines, to help the NHIF remain sustainable and control expenditure. There are 8970 facilities that are certified to use NHIF, and there is a program to expand coverage e.g. “ushirika afya”, to cover for informal sectors, “bodaboda”, “farmers” “ushirika” etc, or you can subscribe as an individual and also for children under “Toto-Afya”.

Also, there are facility loans for the hospitals from NHIF to increase services including medicine loans. All these are strategies to increase coverage to people with NCDs. Among the challenges is that there is no NCDs Registry for the country. The register is needed in order to have data on NCDs for proper planning. We also need to improve on referral systems.

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**2. *How does APHFTA Improve the relationship between NHIF and Private Health Facilities (In reflection of implementation of Standard Treatment Guideline). What is the role of Private health facilities in addressing these issues***

We need to understand the business model and understand what are we providing. We should not entirely focus on healthcare business rather to health business in its totality i.e., how do we come up with strategies that can prevent people from falling sick? In other words, dealing with preventive medicine. Can we do it by providing education or universal health coverage. Private health facilities believe in Prevention, Health access and Financing. How can we associate with other sectors, and using a multi sectoral approach and thinking out of the box? We need to come up with innovative solutions.

**3. *What is the role of Health Economists in Guiding policy and implementation on public health financing***

**George Ruhago**

The NCDs are too costly not to address. The key issues in health economy is linking economy and health, understanding what interventions that are needed and what are the costs of it, and how do we address them. Redesigning benefit packages and thinking of packages that minimize the financial risk is a needed approach

MUHAS has started a Masters course in Health Economics, and offers several short courses that would benefit stakeholders in implementation of improved public health financing. For undergraduate students, the curriculum for Development Studies has been reviewed, and is taught in the 3<sup>rd</sup> year. It includes core concepts in health financing and entrepreneurship. There is ongoing research on cost effectiveness analysis on different issues, like in cardiovascular diseases, cancer, tobacco use etc. We are borrowing from experiences in HIV to study the unit costs for services.

**Andrew Swai**

In 1993 when cost sharing was introduced, diabetes patients were exempted from payments for diabetic care, but currently this is not implemented and patients are paying for treatment. In the country we spent only 40\$ per person per year. We need to add sin taxes. We need to have price control for health in pharmacies and health facilities. NGOs should work with the government and the focus should be NCDs prevention. These may include financing the jogging clubs and nutritionists.

**4. *As a country we are heading toward universal health care – Why does the NHIF package limits preventive services examples, screening.***

- What are the alternative health financing beyond health insurance?

There is an increase in health financing, from 7\$ per person per year to 40\$ per person per year. The NHIF needs to change their focus on prevention, and therefore more funds be re-directed for prevention of diseases. People need to be encouraged to go for a check-up at least

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once a year. This is because prevalence of NCDs is on increase not only in urban, but also rural areas.

- 5. Exemption Policy has been a burden to Hospitals, it needs to be changed, especially toward UHC. What about suggestion to create Health Fund, with money from other sources to be able to cover for these health issues*

**Response from Tumainiel Macha**

The government has a law for mandatory health insurance. The government is considering innovative ideas to improve insurance coverage for the population. Sin tax had been proposed in the new bill. Motor vehicle insurances have a health component that need to be taken up. There are no identified mechanisms on how to get funds for alternative financing. A bill has been passed to address this challenge, and sin taxes have been proposed. In order to improve alternative funding for health insurance, there is a need to also a need to have innovative ideas on how to diversify income other than just regular taxes.

Alternative funding for health insurance will help to address challenges of requests for exemptions of medical bills in the health facilities. NHIF has revised the 2016 benefit package for health insurance. Coverage for prevention of diseases will be included in the revised package. Also, malnutrition in the spirit of cost containment of NCDs and health in general will be included. In future services such as screening once a year, vaccination and immunization will be added in the benefit package, including promoting physical exercises. There are still challenges for Universal health coverage among the population. People are unwilling to voluntarily register for health insurance packages. For instance, bodaboda has the option of joining health insurance package at the cost of TZS 100,000 per year. Although this package is cheap, many people have not registered. There is therefore a need to sensitize people to voluntarily join health insurance in order to improve access to health care.

**Parallel Sessions**

Session 2A: Care and Treatment

**Chair: Dr. Robert Mvungi**

**Rapporteur: Dr. David G. Paulo**

**Presentation 1: The Jakaya Kikwete Cardiac Institute: Five years' experience.**

**Presenter: Mohamed Janabi**

Professor Janabi started by giving a brief of the status of Cardiovascular diseases in developing countries where he stated that these diseases are rapidly increasing and they are the leading cause of deaths in the world in low- and middle-income countries (LMIC). He added that there is a recent shift in the disease pattern with an epidemiologic transition in developing countries where infection and malnutrition are declining while chronic diseases including cardiovascular diseases are increasing. He highlighted the main objective of his presentation which was about evaluation of five years since inauguration of Jakaya Kikwete

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Cardiac Institute. He explained that in the past 20 years, preparatory work was carried out for establishment of open-heart facility in Tanzania included learning from experiences of other countries through among others, study tours. The various task forces that visited other countries and learnt from various sources reported that developing a sustainable cardiac facility is a big challenge, and most of the developing countries that attempted to establish such facilities have not managed to sustain them because of the expensive nature of heart surgery/intervention services. He concluded his presentation by saying that, the success story of JKCI during this initial five year demonstrates the great potential that exists to expand cardiac surgery in Africa. He recommended continued partnership of public and private sectors so as to ensure further sustainability of JKCI.

**Discussion**

Some of the issues raised by the Permanent Secretary from the Ministry of Health included; inappropriate referral system for patients to JKCI which leads to unnecessarily increased workload to the institute. Here it was suggested that, proper referral protocols should be put in place and specify which cases should be referred to JKCI. The response to this comment was that, the number of NCDs is going up and awareness has increased, all these can explain the increased workload at JKCI. Another question was on stratification of mortality from the various procedures done at JKCI by different age groups for easy comparison with international standards. The response to this question was that data is available and therefore stratification can be done. It was further informed that mortality from procedures at JKCI is below the accepted international standards and this outcome can be explained by improved post-surgical care including ICU care.

Three more questions were raised by other members of the floor including (i) how JKCI is planning to incorporate research into services offered, (ii) if there is plan to incorporate interventional nephrology at JKCI, and (iii) if there are plans to do outreaches in other regions. It was informed that there is a research unit at JKCI and so far, there are more than 41 papers published in peer reviewed journals. Currently, more than TZS 400,000,000 has been set aside annually for research and training. It was also suggested to have pocket books from specialized facilities like JKCI so as to help lower level facilities in managing patients in order to prevent congestion at higher level facilities.

**Presentation 2: Electrolytes Supplementation Reduces the Risk of Nephrotoxicity in Patients with Solid Tumors Receiving Chemotherapy with Cisplatin**

**Presenter: Christina Malichewe**

Dr. Malichewe started by explaining that cisplatin is an important drug in the treatment of various cancers. However, this drug causes nephrotoxicity and that it is linked to electrolyte derangement in affected patients. She highlighted the objective of the study which was to evaluate the effect of electrolyte supplementation in reducing kidney injury in patients receiving cisplatin-based regimen. This study was a non-randomized interventional study conducted at ORCI among patients with confirmed solid tumors. Results from this study

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showed that patients in the control group were 2.6 times more likely to experience nephrotoxicity as compared to treatment group and the most common malignancy was cervical cancer. She concluded her presentation by saying that electrolytes supplementation decreases the risk of nephrotoxicity after chemotherapy with cisplatin. She recommended that a randomized controlled trial with a larger sample size should be conducted to evaluate the robustness of these findings.

**Discussion**

A question was raised by participant as to how the research rule out paraneoplastic syndromes. The answer to this question was that the tumors studied were not expected to have paraneoplastic syndromes and hence this was not considered during the study. Another question was on the kind of solid tumors included in the study. The response to this was that cervical, esophageal, breast and head and neck cancers were included in the study. The presenter was also asked on how the study ruled out the effect of dehydration on serum creatinine and she responded by saying that all patients were pre-hydrated before chemotherapy, hydrated after chemotherapy and encouraged to take adequate fluids while at home. The last question was if the study looked into the safety of the electrolyte supplements and the answer was yes, and data for that is available.

**Presentation 3: Rehabilitation Care for Elderly People: Better Practices for Non-Government Organizations.****Presenter: Grace Saria**

In this presentation, it was explained that, rehabilitation care aims at improving the quality of life for people living with life-limiting illness by enabling them to be as active and productive as possible with minimum dependence on others. The presenter outlined the aim of the study which was to examine the types of services related to palliative rehabilitation care provided to older people and perceptions of older people on services provided by NGO.

This study used purposive sampling to select technical staff working at the NGO and used simple random sampling in selecting elderly people served by the NGO. Findings from this study showed that services provided to elderly people included health education and examination for NCDs such as blood pressure, diabetes, oral and dental diseases. Also, special attention is given to each elderly person with some complicated health problems i.e high blood pressure, high blood glucose, eye problems and joint pain who are referred to nearby health center like KCMC Hospital, Kibosho Hospital and Mawenzi Regional Referral Hospital for emergency and further management. The study findings showed that services provided by NGO were perceived important as they improved the elderly people's health conditions. She concluded by saying that rehabilitation care is important as it helps in restoring both physical and emotional functions. She recommended that different stakeholders should support organizations which are involved in rehabilitations services.

**OPEN ACCESS JOURNAL****Discussion**

There was one question asked on this presentation which was questioning on the kind of rehabilitation services provided to the elderly people, however, due to time constraints, this question was not responded to.

**Presentation 4: Presentation and Difficulties Associated with Parkinson's Disease in Tanzanian Parkinson's Disease Patients.****Presenter: Reuben Mutagaywa**

Dr. Mutagaywa started by explaining that Parkinson's disease (PD) imposes a great physical, psychological, and socioeconomic difficulties to the affected individuals with little being known about its presentation and associated difficulties in Tanzania. He further mentioned the objective of the study which is to determine the presentation and difficulties associated with PD in a Tanzanian PD population. In this study, eighty PD patients were recruited. Key findings from this study show that there is a delay in making a diagnosis of PD with more than half of patients presenting with mild to moderate (physical, psychological, and socioeconomic) difficulties associated with PD. He recommended a need for early recognition and diagnosis of PD and its associated complications in Tanzania.

**Discussion**

Following this presentation, the presenter was asked on how did the study rule out normal pressure hydrocephalus. He responded that, the diagnosis for PD was already established before patients were enrolled in the study.

**Presentation 5: Availability and accessibility of morphine in rural settings for Non-Communicable Disease patients: Ndanda Village Masasi testimony****Presenter: Elvis Joseph Miti**

The presenter begun by explaining that, they started Community Palliative Care (CoPC) services in Ndanda Village in 2015 as one of the services provided by UZIMA Project Ndanda (UZIMA) and this was a call by the local people for community health support related to NCDs chronic illnesses, especially prostate and breast cancers. However, there was no systematic provision of morphine to NCDs cancer patients by 2015. This initiative in collaboration with Benedict's Ndanda Referral Hospital (SBH) started advocating for morphine for NCDs patients in Ndanda. The study aimed to advocate for the availability and accessibility of morphine at SBH in Ndanda which was done through training of health workers, community palliative care volunteers as well as funding of the procurement of morphine from ORCI. The achievement of the project was that SBH Palliative Care team have been able to recognize the role of CoPC in the morphine availability and accessibility cycle by June 2020. Moreover, 20 patients started using morphine in Ndanda village by June 2020. UZIMA and SBH combined the funding to purchase morphine from ORCI. The lessons learned from this project was that Palliative Care is a right for everyone including NCDs patients, especially in rural settings. Cancer physical pain management through the

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availability and accessibility of morphine is a requirement in a rural area too. The presenter recommended that rural settings should be one of the priority areas for morphine availability for improved NCDs physical pain management despite the existing strict regulations on the availability and accessibility of morphine in Tanzania.

**Discussion**

The permanent secretary commented that despite the fact that morphine is a controlled drug, availability is assured for patients who deserve it. He added that, there was probably a lack of communication because morphine is available in all regional hospitals and, there should have been a continuum of care to patients who need palliative care at home after discharge including pain management. The presenter was also asked on how fidelity is ensured in the use of morphine in Ndanda village. She responded by saying that people from communities are trained to do pain assessment and refer those who need treatment to the hospital for management.

**Presentation 6: Adherence and safety profile of hydroxyurea in children with sickle cell disease at Muhimbili National Hospital**

**Presenter: Joanes Ntimba**

In the background of his presentation, he explained that Hydroxyurea (HU) lowers the numbers of acute chest syndrome events, the number of pain crises, the need for blood transfusions and number of hospitalizations among patients with sickle cell anaemia. However, there is limited information regarding HU adherence, effectiveness and safety in African population especially in Tanzania. His study aimed at determining the level of adherence, serious adverse events and factors affecting adherence among children with sickle cell anaemia using hydroxyurea at MNH and it was a cross sectional hospital-based study conducted at sickle cell clinic at MNH. From his findings, he **concluded that** this study observed suboptimal adherence to HU among SCD children which was mainly contributed by the long distance to the health care facility and the cost of the drug. Despite the cautioning changes in hematological parameters, HU is generally well tolerated. He recommended free availability of h HU in a number of health facilities offering treatment to sickle cell patients.

**Discussion**

There were no questions or comments for this presentation.

Session 2B: Care and Treatment

**Chair:** Dr. Mary Mayige

**Rapporteur:** Dr. Victor Ruzibukya

**Presentation 1: Bone healing and feasibility of orthodontics tooth movement through regenerated alveolar bone**

**Presenter: Fredrick Machibya**

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The presenter reported that Bio Oss-E and Bio Oss-L recorded the lowest amount of tooth movement than other models of Guided Bone Regeneration (GBRs) assessed. The osteoprotegerin (OPG) concentration registered on 3rd day was significantly higher for  $\beta$ -TCP than control group. The experimental group had significantly higher MMP-2 concentration than control on the 10th day. She concluded that the type of bone regeneration material had a fundamental effect on the pattern of healing makers (OPG, VEGF, and MMP-2).

**Recommendations:** Selection of bone regeneration material is recommended in management of alveolar bone defects. Also training of dentists should be considered by the government.

**Discussion**

The presenter was asked if the method could be used in treatment of children born with congenital malformations. She responded that there are methods put in place that look similar to this but more researches has to be done to provide a clear way forward.

**Presentation 2: Comparative efficacy of routine histology, IHC, and PCR diagnostics for Kaposi's sarcoma in Africa**

**Presenter: John Ngowi**

The presenter reported that Kaposi's Sarcoma (KS) diagnosis is challenging in resource limited settings because of a large number of potential confounding diagnoses, and since Hematoxylin and eosin (H&E) is not a definitive technique, diagnosis of KS has been fraught with both false-positive and false negative diagnosis of KS. Therefore, this study was to determine if adding Immunohistochemistry (IHC) to routine H&E method would improve the accuracy of KS diagnosis. It was concluded that IHC and PCR appear to assist resolution of uncertain KS diagnoses than basing on H&E alone. Recommendations were made that IHC and PCR-based detection for KS should be established in our settings than H&E alone. Histopathological and molecular diagnostic studies should be ongoing to validate findings.

**Discussion**

The presenter was asked which type of PCR was specifically used and if the cost effectiveness was considered when using H&E, IHC and PCR? The presenter responded that comprehensive PCR was used in this study. In the diagnosis of KS, the use of IHC and PCR are very reliable compared to H&E staining.

**Presentation 3: Beta-cell dysfunction and insulin resistance in relation to pre-diabetes and diabetes among adults in North-Western Tanzania.**

**Presenter: George PrayGod**

The presenter started by highlighting that studies on phenotypes of diabetes in Africa are inconsistent.  $\beta$ -cell dysfunction, insulin resistance, and combined  $\beta$ -cell dysfunction and insulin resistance were associated with higher prediabetes risk. HIV, CRP, AGP and HIV were associated with higher diabetes risk, but fat mass was not.

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He concluded that Beta-cell dysfunction seemed to explain most of the pre-diabetes and diabetes and recommended that longitudinal studies should be done to confirm the results.

**Discussion**

The presenter was asked how he could explain from theoretical point of view that pre-diabetes and diabetes results more from insulin resistance than beta-cell dysfunction. He explained that the study contradicts with the theory, so we need more follow up studies that will include individual through pre-diabetes stage to diabetes in order to confirm these findings.

**Presentation 4: Hypoxia-induced aquarín-3 changes hepatocellular carcinoma cell sensitivity to sorafenib by activating the PI3/Akt signalling pathway**

**Presenter: Kija Malale**

Hypoxia-induced changes are primarily activated in patients with hepatocellular carcinoma (HCC) and long-term sorafenib exposure, thereby reducing the sensitivity to the drug. Hypoxia reduced sensitivity to sorafenib and upregulates AQP3, Hypoxia reduced hepatocellular carcinoma cell sensitivity through PI3/Akt.

He concluded that changes in AQP3 expression reduced sensitivity to hepatocellular carcinoma cells to sorafenib. It is recommended more in vivo studies to be conducted to confirm the findings.

**Discussion**

The audience asked if we have different strategies to treat hepatocellular carcinoma. The presenter explained that as the treatment of hepatocellular carcinoma depends on staging, currently we still have fixed options. Only we do early detection and prevention from the risk factors.

**Presentation 5: Determination of Butyrate ameliorative effects on severity of dexamethasone induced diabetic changes in rats**

**Presenter: Rehema Shungu**

The presenter highlighted that recent studies have shown a correlation between the microbial compositions in the human gut with occurring metabolic disorders such as diabetes as human gastrointestinal tract represents a large contact area between the body and the external environment. She conducted this study to determine the beneficial effect and protective potency of butyrate on diabetes and study the diabetic model using rat models as human reference and sodium butyrate as source of the butyrate.

She observed hepatic micro and micro vesicular steatosis, acidophilic bodies and sinusoidal ectasia. It is concluded that reduction of the severity of these changes by butyrate was observed, butyrate suppresses the deleterious effects of dexamethasone-induced diabetic changes.

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Butyrate suppresses deleterious effects of dexamethasone induced diabetic changes. Recommendations were made that Butyrate supplements may be used since have protective effects against diabetes mellitus.

**Discussion**

Neither comments nor questions were raised for this presentation.

**Presentation 6: Molecular response to Imatinib in patients with Chronic Myeloid Leukaemia in Tanzania**

**Presenter: Nasser Ahlam**

Presenter reported that Chronic Myeloid Leukaemia (CML) is among the commonly diagnosed leukaemias in Tanzania. He conducted the study to assess the level of molecular response at different treatment milestones as per European Leukaemia Net (ELN), and determining clinical, laboratory and treatment factors correlating with the acquired molecular response in patients with CML attending ORCI.

The conclusion was made that majority of patients had low rate of molecular response when treated with Imatinib. This could be attributed to advanced disease and cytopenia. Regular PCR monitoring was recommended for timely intervention, switching to second generation tyrosine kinase inhibitors for non-responders and further studies to be conducted to define genetic factors in our patient population.

**Discussion**

The presenter was asked on the common patients' presentations from his experience and how the availability and cost of the tests were. He disclosed that most of the patients present when they are already symptomatic at an advanced stage such as hepatomegaly and severe anaemia requiring blood transfusion. At MNH the tests have been provided at reasonably affordable price and strategies are being made and have been introduced at Bugando and KCMC to provide the tests at low costs.

Session 2C: NCD risk factors

**Chair: Dr. Kajiru Kilonzo**

**Rapporteur: Dr. Karima Khalid**

**Presentation 1: Oesophageal cancer risk factors: a comparative study of patients residing in lowlands versus highland**

**Presenter: Jackson Matondo**

He reported that the mean age of the participants was 57 years, squamous cell carcinoma (SCC) was the most common histological type in both lowland and highland settings. In addition, participants from highlands had almost 2 times odd of drinking alcohol compared to participants from lowland setting. In lowland settings, the commonest risk factor was drinking hot beverages by 97.8%.

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He concluded that oesophageal cancer was still predominant in highland settings but the disease is on the rise in the lowlands too, alcohol and red meat consumption were more in the highlands while consumption of hot beverages was more pronounced in the lowlands.

**Recommendations:** More research to be done on the causal relationship between intake of hot drinks and the development of esophageal cancer in terms of the rate of use of hot drinks and the ideal temperature for the development of esophageal cancer. A prospective cohort study design assessing the relative risk for the development of esophageal cancer in lowland and highland regions can be done to fully understand these risk factors differences in these two regions.

**Discussion**

The presenter was asked on how hot were the hot drinks. He responded that the study did not assess heat levels of the drinks. Another question was on why was only Dar used as a representative site for lowland regions in this study. It was believed that all patients along the coastal zone would go to MNH for histological examination of tissues and ORCI for therapy.

**Presentation 2: Cardiovascular risk profile among patients on psychotropic medications admitted at Mirembe Mental Health Hospital**

**Presenter: Azan Nyundo**

The presenter reported that people with severe mental illnesses have a reduced life span which can be attributed to comorbid physical illnesses. Psychiatric patients have a higher risk of cardiovascular risk profile due to medications. This study involved patients admitted at Mirembe hospital, where authors aimed to assess cardiovascular risk profile among patients who are using psychotropic medications. He summarised that females were at a decreased odd for cardiovascular risk profile, age and lipid profile were also significant factors for cardiovascular risk.

It was recommended that specific risk factors for this population must be addressed to prevent the unfavourable cardiovascular outcome among patients with severe mental illnesses. Screening of these patients should also be advocated during clinic visits.

**Discussion:**

The presenter was asked why she used linear regression in this study? She responded that it was due to the use of continuous variables.

Session 2D: Burden and trends

**Chairperson: Dr. Joyce Masalu**

**Rapporteur: Dr. Mwanaada Kilima**

**Presentation 1: Prevalence, Patterns and Predictors of Obstructive Coronary Artery Disease among Patients undergoing Coronary Angiography in Tanzania**

**TMJ Supplement | Conference Proceedings | TMJ V 32 No. 1 | March 2021**

**OPEN ACCESS JOURNAL****Presenter: Khuzeima Khanbhai**

In introducing his presentation, the presenter stated that coronary artery disease (CAD) is the leading cause of morbidity and mortality worldwide. Healthcare systems in low- and middle-income countries are developing the infrastructure to address the rising epidemic of cardiovascular disease. In the current study, the presenter described the prevalence, patterns, and predictors of angiographically-detected CAD among patients receiving care at the first and only public cardiac catheterization laboratory in Tanzania: the Jakaya Kikwete Cardiac Institute (JKCI).

The prevalence of obstructive CAD among all patients undergoing angiography was 48.5%. Patients with CAD were of older age, mostly above 50 years. Over two-thirds of participants had excess body weight and more than half of participants had a history of hypertension, other high prevalences reported include diabetes, dyslipidemia and positive smoking history. During multivariate analyses, male sex, and diabetes mellitus were found to be the main predictors of obstructive CAD.

**Discussion**

The discussion was based on the high magnitude of obstructive CAD in this study which was comparable to rates reported in the registry data of patients undergoing coronary angiography in high-income countries. The burden of CAD and its associated risk factors were considerable in Tanzania and represent a major public health concern. The presenter concluded that due to rise in NCDs, the burden of ischemia heart disease is in the rise and mimicking a pattern comparable to developed world.

**Presentation 2: Prevalence and Factors Associated with Substance Use Among Police Officers in Dar -es-Salaam, Tanzania****Presenter: Harrieth P. Ndumwa**

The presenter started by explaining that Police Officers have a higher prevalence of substance use as compared to the general population mainly due to the nature of their work. Several factors such as socio-demographic factors, operational stressors, rank and duration at work have been found to be associated with substance use among Police Officers. There's a big knowledge gap regarding the magnitude and factors associated with substance use among Police Officers in Sub-Saharan Africa hence she indicated that findings from this study will be of utility in informing mental health prevention and response services.

In reporting her findings, she explained that about half of the participants reported to ever used any substance, whereas only about a third of the participants reported to have used any substance in the past three months. Being single and working under general duties section had were the main factors associated with alcohol use.

**OPEN ACCESS JOURNAL****Discussion**

She elucidated that findings from this study show that different substances especially alcohol are commonly used by the Police Officers in Dar es Salaam and hence recommended that there's a need to screen for commonly abused substances in the Police Force and provide help and referral where necessary.

**Presentation 3: Pattern, distribution, and outcome of otorhinolaryngological conditions at the emergency department, Muhimbili National Hospital****Presenter: Irene Adabu**

The presenter started by addressing that Otorhinolaryngological (ORL) diseases attribute to a major cause of patients reporting to the emergency department and some of them are life threatening and require immediate intervention. This early diagnosis and management result in reduction in morbidity and mortality. Therefore, she aimed to study the pattern, distribution and outcome of patients with ORL conditions presenting at emergency medicine department in MNH.

In her findings, she reported that among the ORL conditions, upper aerodigestive tract conditions were the most prevalent while head and neck conditions were the least encountered. Nasal and upper aerodigestive tract anatomical sites were predominantly involved in younger age groups while head and neck conditions dominated among the elderly above 50 years.

**Discussion**

It was informed that ORL conditions occurred in all age groups. Majority of patients were children under ten years of age with mainly foreign bodies in ear, nose or upper aerodigestive tract. Most of the patients had a successful outcome after receiving emergency care. Malignancy conditions in upper aerodigestive tract were reported more than one month after onset and in advanced stage, hence required emergency intervention.

The presenter recommended that health education to community and health workers on ORL conditions need to be provided. Also the importance of early diagnosis and subsequent treatment should be emphasized. Additionally, patients with ORL conditions presenting with clinical features of upper aerodigestive tract conditions should be fully examined and investigated to assess for any disorder in these areas. Health education on ENT conditions to community and health care provider for early diagnosis and outcome. And, lastly, the need for further studies with large sample size and longer study time were underscored.

**Presentation 4: Prevalence, Types and Clinical Presentation of Heart Failure Among Hypertensive Patients seen at a tertiary hospital in Dar es salaam, Tanzania. A Cross-Sectional Study****Presenter: Gervas Nyaisonga**

The presenter highlighted that heart failure with preserved or reduced ejection fraction is a common complication in patients with hypertension and that clinical presentations differ

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based on ejection fraction and may require special attention to diagnose. The presenter assessed the prevalence, types and clinical presentation of heart failure among hypertensive patients being followed-up at a tertiary hospital in Tanzania.

In presenting her findings, about half of the participants were hypertensive, the prevalence of heart failure was 29.5%. Majority of patients with heart failure had preserved ejection fraction (HFpEF). Participants with heart failure with preserved ejection fraction were more likely to be outpatients, older, obese, and with higher mean blood pressure and more left ventricular hypertrophy.

**Discussion**

The conclusion made was that more than a quarter of hypertensive patients referred for echocardiogram examination at a tertiary hospital in Tanzania have heart failure, mainly HFpEF. The presenter recommended active screening for heart failure, especially among obese and uncontrolled heart failure patients, as they may present with HFpEF which can pass unnoticed. It was asked on what is active screening in clinical settings and what to do? The presenter responded that ECHO is to be done at least once a year.

**Presentation 5: Metabolic bone disease and its associated factors among patients with chronic kidney disease at Muhimbili National Hospital****Presenter: Felix F. Mungulluh**

The presenter highlighted that globally, the prevalence of chronic kidney disease-metabolic bone disease (CKD-MBD) among patients with end stage renal disease is high and its severity tends to increase with the progression of the kidney damage, and is associated with high mortality rates. Metabolic Bone Disease in patients with CKD is often asymptomatic, and if symptoms occur, most of the time, they are non-specific and late in onset, with almost similar presentations in both high and low bone turnover diseases.

The presenter reported to include a total of 300 participants with CKD stage in this study and he found the prevalence of CKD-MBD to be 75.0%. The most common MBD was hyperparathyroidism, hypocalcemia and hyperphosphatemia, which was the least common. Factors which were found to be significantly associated with CKD-MBD were the use of calcium supplements, use of phosphate binders, being on dialysis, use of calcium rich diet and use of low phosphate diet.

The presenter concluded that metabolic bone diseases are common in patients with CKD at MNH. Also, patients with CKD should undergo serial assessment of phosphate, calcium and parathyroid hormone level for early detection and treatment of complications.

**Discussion**

From the discussion, it was recommended that patients with CKD should undergo serial assessment of phosphate, calcium and PTH levels so as to diagnose CKD-MBD early and get treated. CKD patients should be advised to limit their dietary phosphate intake so as to reduce their serum phosphate level and to take oral phosphate binders which bind phosphate in the

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gut and keep it from being absorbed. Vitamin D analog can also be considered to be given in those patients with low levels of vitamin D.

**Presentation 6: Can Diabetes services in Tanzania learn from Global North and improve Diabetes patients` care by using technology for those who need it? : The use of technology to transform Diabetes care for all**

**Presenter: Gideon Mlawa**

The presenter highlighted that advancement in technology has seen an increase in the uptake of Insulin Pump therapy in the global north countries led by the USA. The technology currently being used for diabetes patients in most countries include Insulin pump, Continuous Glucose Monitoring (CGM), as well as FreeStyle Libre. However, he reported that In Tanzania, the use of the above technology is limited to one or two centres. Hindu Mandal Hospital under Prof. Kaushik is leading the way with few patients on Insulin pumps and the use of CGM to guide management of complex diabetes patients with erratic and poor diabetes control. He then presented a retrospective audit on the use of Insulin Pump from one of the UK Hospital.

From his findings, most patients had type 1 diabetes, 1 patient was type2 diabetes, 1 patient had LADA. Among them, only about 10% of patients were started on insulin pump from another European country, or other Hospitals in UK. 12% of patients had insulin pumps commenced in paediatric age mainly for poor glycaemic control, and few patients were started on Insulin pump during pregnancy due to poor control or hypoglycaemia.

He then concluded that Diabetic patients have to be offered high-quality care and evidence-based diabetes treatment including insulin pumps which is recommended for adults and children over the age of 12.

**Discussion:**

It was added that African countries including Tanzania have a decade to introduce the use of technology such as Insulin Pump therapy, CGM, Freestyle Libre as well as artificial pancreas in order to provide high quality care to both type 1 and type 2 diabetes.

Session 3A: Multisectoral Approach

**Chairperson: Prof. Andrew Swai**

**Rapporteur: Dr. Wolfgang Bernard**

**Presentation 1: Analysis of Existing Policies, Readiness, Opportunities and Challenges to Enact and Implement Sugar-Sweetened Beverage Tax**

**Presenter: Twalib Ngoma**

The presenter started by introducing the subject on existing policies, readiness, opportunities and challenges for implementing tax on Sugar Sweetened Beverage (SSB) as an effort to combat NCDs. He explained that the study aims to estimate economic burden of NCDs from personal expenditures to government costs incurred. From the findings, the problem of

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consuming SSB is big and the dangers are big which predispose the consumers to NCDs, 1 bottle of coca cola soda for example contains 5 to 6 tea spoonful of sugar. The top killers included cardiovascular disease, cancers, respiratory diseases and diabetes and the personal annual cost for NCDs treatment was about \$119 in 2019, the costs incurred in the families and government at large are very high which aggregate the problem of income loss.

He concluded that the costs of NCDs to the health system, individuals, households, and government are significant and growing. Therefore, he recommended that policy makers should consider investing massively in prevention of NCDs since it imposes the highest economic burden and implementing fiscal policies have highest impact in reducing overall burden of NCDs.

**Discussion**

It was agreed that the MoHCDGEC should put more emphasis about the dangers of SSB especially on their strategic plans of combating NCDs and since all carbohydrates containing food cannot be taxed, but at least it is feasible to start taxing SSB.

**Presentation 2: Public and Private Partnerships-PPP; a sustainable model of primary prevention of non-communicable diseases in low resource settings.****Presenter: Manase Frank**

The presenter highlighted that Tanzania is among the countries most hit by the NCDs in SSA hence sustainable innovations are needed to combat the problem. He introduced CCP medicine as a community-based organization that aims to prevent NCDs and this study reported the process and outcome brought up by Community Health Promotion Public Camp conducted in 2018. Testing was done and the prevalence of pre hypertension and hypertension, high blood sugars, ENT problems, oral problems and risk of breast and cervical cancers were high, 20% of males were found at risk of prostate cancer.

He concluded that findings from the study indicate that the burden of NCDs is significantly high and called for effective approaches to counteract the effect. He also emphasized on the importance of public private collaboration in the fight against NCDs. He therefore recommended that public and private sectors should actively engage in this fight to make it successful.

**Discussion**

There were no questions or comments on this presentation

**Presentation 3: Effective Mental Healthcare International Partnerships****Presenter: Chris Baumstead (Virtual Presentation)**

The presenter introduced on the ongoing partnership between Central & North West London NHS Foundation Trust and Mirembe Psychiatric Hospital that has been working since 2010 to date. He was interested in summarising the positive outcomes and key factors that had led

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to the success of this collaboration, the aim being to increase the managerial and clinical capacity of the Mirembe Hospital so as to improve patients' care and outcome.

Successful grants obtained from this collaboration have helped in training staff at Mirembe hospital, to prepare trainers of trainers (common as Champions) and some staff members were able to visit UK centers for observational learning, mentorship and grant applications.

He reported that currently, they have trained 170 Mirembe Hospital staff including trainers which has led to reduction in violence and better patient-staff communication.

He proceeded on the lessons learned that mutual respect and trust are essential for a successful partnership, also recommended that such collaborations are to be encouraged and supported to have better results.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 4: Assessing the performance of Council Health Management Team: Facilities readiness and provider Competence on providing non communicable diseases service in Katavi region Tanzania**

**Presenter: Medard Andrew Nguma**

The presenter started explaining the critical role of the primary health facilities on delivery of effective NCDs services. His study aimed to assess council management team as well as facility readiness and provider's readiness. In summarising the findings, he reported that there was good compliance to NCDs services in 20% of facilities which showed correlation with education level of core members of the council, also readiness to provide NCD services was good and about half of the participants were found to have knowledge in providing NCDs services.

Lastly, he concluded that this study found poor compliance of council's health management team in providing NCDs services in primary health facilities and this had led to limited availability of NCDs services. He therefore recommended that emphasis should be put on raising the compliance of facilities to NCD services so as to improve service delivery in Primary health facilities.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 5: The Effect of Sugar-Sweetened Beverages (SSBs) tax on Obesity Prevalence in Tanzania: A Mathematical Model.**

**Presenter: Martin Chgere**

The presenter initially highlighted that the magnitude of obesity is rapidly increasing contributing to consequences and a high burden of NCDs. He explained that obesity is contributed by the use of SSB, which have high sugar content for that matter. Tanzania was

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previously willing to tax alcoholic and SSBs to reduce its consumption. This mathematical modelling study aimed to assess the potential impact of taxing SSBs on obesity magnitude.

In reporting his finding, he explained that according to the results of the modelling study, imposing 20% tax on SSBs in Tanzania was predicted to reduce obesity prevalence by 6.6%, the reduction was observed more among males than females, no change was observed in elderly group. However, if you pose a tax of 20% now you lower the energy intake by half but overall change of BMI is less than 5 to 12%, which is not significant. This is likely due to substitutional effect i.e. change to alternatives but then the underweight and the poor may get negatively affected, as they may have no alternative to energy intake due to cost effectiveness. He then concluded that this current study proposes implementations of an effective tax on SSBs hence advising the government to review and accommodate these findings to reduce NCDs burden in our country as tax introduction will among other things lower consumption of SSB and possibly reduction in NCDs.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 6: Hospital Pharmacists have roles to play In Reducing NCD costs****Presenter: Deus Buma**

The presenter elucidated that pharmacists in developing countries are under-utilized, this is because they are not directly involved in patient care and seldom do they engage in surgical procedures. He conducted this study to evaluate the costs reduction when including pharmacists in the medical team and also to study the perception of other medical team members towards this step at MNH. He reported to have found that there is about 29% reduction in medical supplies costs when the pharmacists were allowed to engage in surgeries compared to when it was not done so. On interviews, majority of health care workers had positive perception towards pharmacists' engagement in surgical procedures, a few experienced medical staff disliked the idea of engaging pharmacists due to their lack of knowledge on surgeries performed.

He concluded that pharmacists do play an important role in cost reduction relating to patient care and he then recommended that healthcare facilities to engage pharmacists in hospital theatres as this has shown to significantly lower down the costs associated with disposal of drug and other consumables. Teaching hospitals/universities to include training pharmacist to be involved in surgical procedures in the operating theatres.

**Discussion**

There were no questions or comments for this presentation.

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Session 3B: Care and Treatment

**Chair: Dr. Crispin Kahesa****Rapporteur: Dr. Basil Tumaini****Presentation 1: Is fluoxetine the simple remedy for post-stroke motor recovery in Low-income countries?****Presenter: Emmanuel Massawe**

Fluoxetine held particular promise for stroke survivors in low-income countries, given its widespread availability. The researcher highlighted the need for pharmacotherapy to assist motor recovery in stroke survivors as a complement to physical therapy. In this phase II non-randomized single-blind trial, 27 participants with a mean age of 53 years, enrolled as per the FLAME2 trial criteria in France, received 20mg of fluoxetine daily. The majority of the patients survived up to 90 days of follow up and only one death was reported. It was concluded that fluoxetine was well tolerated with excellent adherence and participants had better motor and mood status at 90 days. The researchers recommended that a larger study is needed.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 2: Metronomic oral Etoposide (MOE) for palliation in children with malignancy****Presenter: Salama Mahawi**

The researcher presented the retrospective review of children with different types of advanced malignancies planned for palliation. Oral Etoposide at a dose of 40mg/m<sup>2</sup>/day for at least a month was provided. The commonest malignancy was retinoblastoma. Side effects were experienced in about a quarter of the participants, these include vomiting, constipation, anaemia and neutropenia. Half of the children were asymptomatic with six months of treatment with MOE, and the other half had progressive disease. The researcher pointed out the value of oral Etoposide in palliation, symptoms were palliated, quality and duration of life improved for the majority of children treated hence ascertained that MOE is a valuable palliative tool. Further investigations on MOE oral chemotherapy are warranted.

**Discussion**

A participant asked about the indication for oral Etoposide in the trial. The researcher replied that it is used when tumours are deemed for palliation. It was further asked on whether Etoposide is suitable for home-based care? The presenter explained the convenience of oral therapy and pointed out that complete blood count needs to be monitored monthly.

As to why oral over intravenous (IV) Etoposide was chosen while research shows IV to be better, the researcher pointed out that one of the aims of this study was to choose an intervention with less cost.

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When asked whether the observed improvement was proven to be due to Etoposide while palliative care comprises several interventions, it was agreed that the point could not be solely verified in the retrospective design.

**Presentation 3: Target heart rate in cardiac rehabilitation and exercise program**

**Presenter: Vasanth Narayanan**

The presenter began by highlighting the importance of exercising within the target heart rate for myocardial and vascular physiological changes to occur. The evidence has supported the fact that the physiological changes in the myocardial and vascular system only occurs if the exercise is done within the range of targeted heart rate (RTHR). He described that an exercise prescription should include optimal intensity, duration (with a warm-up, actual exercise, and cool down), frequency (3-5 times per week), and mode. He reported that this article will give adequate information about calculating RTHR, physiological effect of exercising within the RTHR, its benefits and importance. He ended up by urging practitioners to teach clients to exercise within the RTHR.

**Discussion**

It was pointed out about the ability of some smart electronic devices to monitor heart rate.

**Presentation 4: Exploring spirituality issues in palliative care in Muheza**

**Presenter: Veronica Mkusa**

The researchers had hypothesis about the potential role of religious leaders in palliative care, given their respected roles in the health sector in their communities but little is known about their involvement in the care of those with life-threatening illnesses. So, this study was conducted to explore the experience of religious leaders regarding care of patients suffering from life-threatening illnesses. The qualitative study revealed their significant role in providing spiritual support as well as social support to patients with life-threatening illnesses, thus serving to improve their quality of life. The presenter, therefore, recommended their inclusion into institutional palliative care teams and provision of training to them to ensure implementation of the best practices during their service delivery.

**Discussion:**

The audience inquired about the type of study design employed and how study participants were recruited. The presenter responded that she used a cross-sectional design and the participants were purposively enrolled in the study.

**Presentation 5: Challenges in the management of retinoblastoma**

**Presenter: Nicholaus Benedicto**

The researcher began by highlighting the epidemiology of retinoblastoma as a common childhood malignancy. He pointed out that primary enucleation is curative in over 95% of cases. He then described that the study aimed at elucidating the reasons for parental/caregiver

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refusal of enucleation given the high refusal rate. The study discovered the commonest reason for parental/caregiver refusal of enucleation to be their perception towards the appearance of the child after enucleation. The researcher, therefore, recommended the provision of ocular prostheses and protective glasses to all children after enucleation, as these significantly improve their appearance.

**Discussion**

The discussion centered on raising awareness to healthcare providers to assist in the early detection of retinoblastoma. Opportunities for detection were highlighted since the tumor is slowly growing. It was informed that children present to healthcare providers for various services, including vaccinations. It was pointed out that the detection of leukocoria should alert the provider of the need for further review by an ophthalmologist.

**Presentation 6: Scintigraphy bone metastatic patterns of prostate cancer at Ocean Road Cancer Institute, Dar es salaam, Tanzania****Presenter: Revelian Iramu**

The researcher began by highlighting the epidemiological importance of prostate cancer as the leading cause of morbidity and mortality in men. The retrospective study revealed that over half of the patients with prostate cancer had bone metastasis, with lumbar and thoracic spine segments being the most frequently affected. The researcher pointed out the association between bone metastasis and a PSA level greater than 20 and a Gleason score greater than 7. The researcher recommended the need to perform bone scintigraphy in those with a PSA level and Gleason score associated with a higher prevalence of bone metastasis, as pointed above.

**Discussion**

No questions or comments were provided for this presentation.

Session 3C: Care and Treatment

**Chair: Dr. Naizihijwa Majani**

**Rapporteur: Dr. John Ngowi**

**Presentation 1: The Prevalence of S-Hemoglobin and Baseline Knowledge on Sickle Cell Disease among Pregnant Women Attending Antenatal Clinics in Dar-Es-Salaam, Tanzania.****Presenter: Hilda Tutuba**

The presenter started by elaborating about the burden of sickle cell disease (SCD). She explained that SCD is the single most important genetic cause of childhood mortality globally. Newborn screening is the recommended intervention aimed at early identification of babies with SCD and their linkage to care in order to reduce the morbidity and mortality due to SCD. In most countries in Sub-Saharan Africa, most women of reproductive age have limited

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knowledge on SCD and are unaware of their SCD status, hindering likelihood of screening their newborns for SCD. She mentioned the aim of the study which was to determine the prevalence of S-hemoglobin and assess the baseline level of knowledge on SCD among pregnant women attending antenatal clinics in urban settings in Dar es Salaam, Tanzania, a descriptive cross-sectional study. Results of the study shows that, 16% of the participants had S-hemoglobin and they had neither screened for SCD before nor did they know about their sickle cell status. The study concluded that, despite the high prevalence of S-hemoglobin among pregnant women attending antenatal clinics in urban settings in Tanzania, there is very low level of knowledge on SCD and personal knowledge of SCD status. The presenter recommended use of antenatal clinics as a platform to educate pregnant women on SCD as well as establishing regular screening of SCD among pregnant women and newborns.

**Discussion**

There were no questions or comments for this presentation.

**Presentation 2: Predictors and outcome of cardiac arrest in paediatric patients presenting to EMD-MNH****Presenter: Amne Yussuf**

Paediatric cardiac arrest causes mortality, disability, and health care dependence. In Sub Saharan Africa, studies have shown that the incidence of in-hospital paediatric cardiac arrest in the Emergency Medicine Department (EMD) is high. She mentioned that the study aimed to determine the predictors and outcome of cardiac arrest in paediatric patients presenting to EMD of MNH in Tanzania, a prospective cohort study. From the results of the study, she concluded that, mortality after cardiac arrest was high in this EMD. The incidence of paediatric cardiac arrest was one in one hundred paediatric patients who came to our emergency department and the predictors of arrest were compromised circulation, bradycardia as the initial vital sign, hyperkalemia, elevated lactate levels and the need for oxygen therapy and intubation. Outcome can be improved by strengthening the pre-referral care and providing timely critical management to prevent cardiac arrest. She recommended that there is a need for establishing a warning system, developing clinical protocols, advocating earlier referrals and strengthening pre-referral treatment so as to provide a better and timely care of critically ill children. Research interventions aimed to identify and treat children at risk of cardiac arrest within the resource constraints of this setting are also needed. A take home message from her presentation was that sepsis was the main provisional EMD diagnosis, and tachycardia (for age) was the most frequently reported vital sign.

**Discussion**

There were no questions or comments for this presentation.

**OPEN ACCESS JOURNAL****Presentation 3: Anaemia among preterm infants attending post natal follow up clinic at Muhimbili National Hospital****Presenter: Zawadi Edward**

The presenter first provided a background of her presentation in which she highlighted that preterm infants are vulnerable to a number of medical complications including anaemia, a significant public health problem with consequences on neurodevelopment. She further explained that this study looked at the magnitude of anaemia and its associated factors among preterm infants at 6 weeks chronological age in a paediatric clinic, a hospital based cross-sectional study. From her results, she concluded that the proportion of preterm infants with anaemia at 6 weeks chronological age is high despite two thirds being on haematinics supplementation with moderate preterm and multiple phlebotomies significantly contributing to the occurrence of anaemia. She finally recommended the need for screening preterm infants for anaemia, appropriate management and close follow up. The take home message from her presentation was that, phlebotomies were the main cause of anaemia among preterm infants and hence it is important to limit the number of phlebotomies among preterm infants.

**Discussion**

There were no questions or comments on this presentation

**Presentation 4: Knowledge, attitude, and practice on cervical cancer screening among women living with HIV in Kilimanjaro region, northern Tanzania****Presenter: Dr. Faustine Kimondo**

The presenter started with a brief introduction on cervical cancer in which he explained that, cervical cancer is a public health concern being the fourth most common cancer in the world among women in both incidence and mortality. Women living with HIV are disproportionately at a higher risk of developing the disease. Knowledge and attitudes towards cervical cancer screening are crucial in determining the uptake of screening intervention among the eligible women. He stated that, this study aimed at determining knowledge, attitude and practice of cervical cancer screening among women living with HIV in the Kilimanjaro region, northern Tanzania, following the integration of these services in routine HIV care in the country. From results of the study, he concluded that women living with HIV in this study had inadequate knowledge, but favorable attitudes towards cervical cancer screening, while half of all women had screened for cervical cancer. He recommended that, efforts should be directed to capacity building of health care workers at CTC and scaling up the mass media as relevant interventions to promote the uptake of cervical cancer screening programs among women living with HIV in Tanzania.

**Discussion**

There were no questions or comments for this presentation

**OPEN ACCESS JOURNAL****Presentation 5: Controlling NCDs through effective tobacco control in Tanzania****Presenter: Lutgard Kagaruki**

The presenter started by explaining that, tobacco is a common risk factor for the major NCDs namely cancer, cardiovascular disease, diabetes and chronic respiratory disease and in Tanzania, NCDs account for 27% of all deaths. Realising that tobacco use was a global pandemic, WHO developed the Framework Convention on Tobacco Control (FCTC), an evidence-based treaty that reaffirms the right of all people to the highest standard of health. Tanzania ratified the Convention in 2007 but is yet to implement it. In order to control NCDs effectively, Tanzania should enact a tobacco control law that conforms to the WHO FCTC as soon as possible. His study aimed at exploring the health, economic, environmental and social hazards of tobacco in Tanzania, to support a case for full implementation of the WHO FCTC. Findings from his study concluded and recommended that, in order to control tobacco and, hence, NCDs effectively, it is important for Tanzania to fully implement the WHO FCTC, by tabling in parliament the proposed tobacco control bill, which is in line with the requirements of the Convention. He emphasized that tobacco farmers should be introduced to alternative cash crops farming, tobacco use advertisements in public should be abolished and, laws to burn tobacco smoking in general should be enacted.

**Discussion**

There were no questions or comments for this presentation

*The presentation titled 'Neonatal anthropometrics measurement as a proxy measure of birth weight in Muhimbili National Hospital Dar-es-salaam Tanzania', which was supposed to be presented by Dr. Nouzhat Salim Abdallah was not done.*

Session 3D: Innovation and Technologies

**Session Chair: Dr. Faraja Chiwanga**

**Rapporteur: Dr. Khuzeima Khanbai**

**Presentation 1: MoyoApp, the future of cardiovascular disease, prevention and control****Presenter: Faustine C Kessy**

Presenter introduced the MoyoApp as the mobile application for individual health data storage and health education promotion that uses artificial intelligence to predict the chances of occurrence of cardiovascular diseases. MoyoApp will be accessible to all smartphone users, believing that most of these people are in urban areas as they are more at risk of NCDs due to sedentary lifestyle.

The application involves the recording of various health data, from simple ones like blood pressure, blood sugar level, height and weight to complex ones like lipid profile. The data will be interpreted and analysed by artificial intelligence and feedback will be provided to the user. MoyoApp is now in a working prototype stage and has so far passed the initial ideation stage

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and will work through monthly subscription of 3000Tsh. The primary target market is all smartphone users and mostly youth from the age of 25 years.

He concluded that MoyoApp is expected to be much more effective to prevent a 20% increase in NCDs burden by 2030, if it will receive maximum support from stakeholders in terms of ideas and funds.

**Discussion**

The presenter was asked on how confidentiality is assured in the app? It was responded that the Moyo app will have critical data and therefore it has double encryption to enhance security of the data. Since the app will also allow to do surveillance on the collected data on NCDs in Tanzania, there will be prior consent by users when they register on app for their data usage in clinical research.

**Presentation 2: Digitalizing NCD and health information into understandable and entertaining way to educate society.****Presenter: Gloria Charles Mlagwa (AFYATOON)**

The presenter introduced AFYATOON as a group of digital visual animations developers aimed at digitalizing health content and delivering it to the target population. Its objective is to digitalized health content and delivering vast and wide health information in the simplest ways in an educative and entertaining manner.

This program uses visual art technology including 2D and 3D animations, motion graphic and posters to digitalize health content, presenting it in a story-based way to educate and still entertain the recipient through social media platforms and hospital waiting areas. Afyacomic (since May 2020); is a recent project that has created up to 15 online comics and comic animations in key areas of cardiovascular, respiratory, diabetes and dental diseases. Afyacomic's recent involvement was in the world sickle cell commemoration in the month of July 2020, where it advocated on the information on sickle cell disease, which was showcased through AfyaToon online platforms.

She lastly concluded that simplicity in terms of content and manner of presentation of health is key to increase community's awareness on the effect of NCDs and the way forward.

**Discussion**

The presenter was asked about the validity on the health messages which are broadcasted. Are the messages being endorsed by the Ministry responsible for Health before being broadcasted? The response was that currently the messages used are already validated by the Ministry of Health. These are already existing messages which are being translated but work is on-going to get a separate validation service from ministry for Afyatoon. The future plan is to work independently in collaboration with the ministry. The presenter was asked if there is a possibility to get sponsors for the program. She responded that the time was limited in the beginning, but now the network is being expanded. The plan is to start collaborating with other sectors and professionals who could take this initiative to the next level with media ideas.

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**Presentation 3: M-PALLIATIVE care link: Examination of a digital solution to palliative care and coordination among Tanzania cancer patients.**

**Presenter: Mamsau Ngoma**

The presenter explained that improved end-of-life symptom control among cancer patients is a Tanzanian public health priority needing innovative solutions. Digital-health holds promise; however, palliative care specialist access is poor. She aimed to produce Field-test M-Palliative Care Link (mPCL) among user-groups (patient, specialist, LHW) recruited through ORCI. The presenter found that there were more women, greater numbers of cervical cancer patients and higher use of discharge morphine in the mPCL vs. phone-contact group. She concluded that although intervention arm symptom scores were higher across the study period, between-group sociodemographic/clinical differences make it difficult to compare outcomes. She recommended a larger randomized study of mPCL as a means to improve user-group communication with the goal of remote symptom management in under-resourced settings.

**Discussion**

The presenter was asked on how did all the study participants manage to have access to the mobile network (day bundle)? It was responded that data bundles and smart phones were purchased for those who did not have them. For sustainability, there is a need to enhance other means of follow up such as direct phone calls which have shown to produce similar data to mPCL.

**Presentation 4: Development of a web-based application with a GFR calculator to assist renal dosage regimen adjustment.**

**Presenter: Castory Munishi**

The presenter aimed to determine appropriateness of dosage adjustment for patients with renal impairment at MNH and to develop a web-based application with a GFR calculator to assist in dosage regimen adjustment. The developed web application should be validated and adopted into clinical settings. A Tanzanian dose adjustment for patients with renal impairment should be developed. Clinicians should receive trainings and sensitization programs in managing patients with renal impairment.

**Discussion**

The presenter was asked to explain how unique is the identification number (ID) in terms of follow up of patients. He responded that currently, every hospital uses its own ID in terms of patient entry and to get desirable dose pertaining to their renal status. There has been no plan on integration of unique ID which can be linked nation-wide for patients to get a follow up in case patient changes the health care provider. Feasibility for system integration is being assessed. The presenter was also asked about the challenges faced while developing a digital platform and app? He responded that digital request is low, and understanding technology is still a bit on the lower side.

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One of the participants mentioned that there are international validated apps from major societies of medicines. He then wanted to know the uniqueness of the new app used in the study. The presenter responded that the app is unique as it gives a level of dose adjustment according to estimated glomerular filtration once you enter patient's data and also will give you patients follow up progress on their kidney function status.

**Presentation 4: Machine Learning Approach Towards Improving Cardiovascular Health in Tanzania**

**Presenter: Asifiwe Makawa**

The presenter started by explaining that NCDs such as cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases now contribute about a third of all deaths in the country and are a source of an increased disability in Tanzania. He conducted the study to develop a predictive model for the improvement of cardiovascular health by using phenotypic data. Features captured include Body Mass Index, systolic and diastolic blood pressure, pulse rate, fasting blood sugar, lipid profiles; LDL and HDL, age, and sex. The support vector machine (SVM) had an accuracy of 92.6%, the kernel width achieves higher accuracy when increased generalization. He recommended that the best approach is to implement the SVM in the hospital information systems.

**Discussion**

The presenter was asked the reason of developing such an application when there are already international apps available. He explained that it has multidisciplinary approach, uses a Cox model and confounders and validity of final results will be accurate. He was further asked on how does the model help to separate the differential diagnoses from the actual cardiac disease since it seems to have a very complex interface. Why this model? The presenter explained that it has been seen that machine algorithms are used in larger scales such as farming. He further said that they visited many bigger hospitals which have high precision of tools for diagnostic purpose and found that these electronic tools make the data cleaner and more precise. Lastly, he was asked what about the challenges faced. He said that the main challenge was lacking literacy in machine algorithms, and understanding how it works.

**CONFERENCE RECOMMENDATIONS**

The scientific subcommittee developed a system to collect important contributions from each scientific track. A team convened and developed a list of evidence summarized and recommendations that need to be taken on board in order to enhance efforts to address NCDs in Tanzania. The following are the key recommendations from the conference:

**1. Burden of NCDs need urgent attention and response**

The burden of NCDs is alarming and increasing in an unprecedented rate in Tanzania. Efforts by different stakeholders are needed. This needs a multisectorial efforts. The Ministries

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responsible for Health, Education, roads and infrastructure, and trade have to work together to implement and advocate for:

- i. Strong and sustained promotion of healthy lifestyles
  - ii. Development and implementation of Social Behavioural Change and communication strategy for NCDs
  - iii. Ensuring effective implementation of the existing NCDs strategic plan and aligning it with other relevant sectorial strategies
  - iv. Engaging learning institutions from early childhood to higher learning to realize sustained behavioral change for NCDs prevention
  - v. Mainstreaming and evaluating the role and implementation of NCDs education from primary education to higher learning institutions
  - vi. Aligning existing policies and implementation thereof for risk factors of NCDs (Example, tobacco control policies, sweetened sugary beverages, food labelling, and promoting physical activities in schools)
- 2. Strengthen multisectoral approach and engagement in the NCDs response**
- i. Form a strong multi, and intersectoral coordination mechanism from national level down to the community level
  - ii. Ensure protection of public spaces for physical and recreational activities
  - iii. Reach out and engage religious and community leaders in the NCDs response
- 3. Strengthening health care financing in addressing NCDs in the context of Tanzanian population**
- i. Ensuring coverage of health insurance to cover all Tanzanians and reduce higher payments for healthcare. The current efforts for universal health coverage through mandatory health insurance are commendable and need to be fast tracked.
  - ii. Health insurance coverage needs to be redesigned to cover NCDs prevention, care and treatment. The current model is unlikely to reduce the burden of NCDs since it is targeting treatment only. The government through MoHCDGEC, National Health Insurance, PORLAG, and health insurance stakeholders should ensure that:
    - ✓ All insurance schemes to be able to address NCDs response
    - ✓ Start dialogue on mandatory health insurance according to the context and subpopulation
    - ✓ The Government to identify alternative sources of funds for health financing for NCDs (example, Sin tax, community contribution/ mobilization, corporates, Small and Middle Entrepreneurs)
    - ✓ Premium on motor vehicles, houses, and other insurances to directly contribute into health as health financing for injuries, burns, and other NCDs
    - ✓ Earmarked taxes to form health fund
- 4. Develop and strengthen human resources competencies to address NCDs response**

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- i. Strengthening competencies of the existing human resources for health to prevent and control NCDs
- ii. Ensuring that the current training curricular for health workers are addressing the current burden of NCDs
- iii. Strengthen screening and treatment services in all health services delivery (especially primary health care) to make use of available human resources.

**ABSTRACTS PRESENTED AT THE CONFERENCE****Oral Presentations – Day One****Theme: Health Systems****Integrating HIV, diabetes and hypertension services in Africa: study protocol for a cluster-randomised trial in Tanzania and Uganda**

**Authors:** Savoki Mfinanga 1,2, Sokoine Kivuyo<sup>1</sup>, Samafilan Ainan<sup>1</sup>, Joseph Okebe<sup>2</sup>, Anupam Garrib<sup>2</sup>, Josephine Birungi 3,4, Godfather Kimaro<sup>1</sup>, Elizabrt Shayo<sup>1</sup>, Kaushik Ramaiya<sup>5</sup>, Erik van Widenfelt<sup>2</sup>, Marie Claire van Hout<sup>6</sup>, Max Bachmann<sup>6</sup>, Dominic Bukenya<sup>7</sup>, Walter

**Affiliation:** 1. National Institutes for Medical Research, Dar es Salaam, Tanzania 2. Liverpool School of Tropical Medicine, Pembroke Place, Liverpool, L3 5QA 3. The AIDS Support Organisation, Mulago Hospital Complex, Kampala, Uganda 4. MRC/UVRI & LSHTM Uganda Research

**Background:** Disease epidemiology has changed rapidly in Africa. Until about a decade or so ago, African health services were dealing principally with acute infections. HIV programmes in sub Saharan Africa are well-funded and crucially over 60% of people with HIV-infection are in regular care with good viral suppression. The programmes for diabetes and hypertension are weak, and the burden of diabetes and hypertension is rising where only less than 5% of people with diabetes or hypertension are in regular care.

**Aim:** The aim of the study is to assess the effectiveness of the integration of services for diabetes, hypertension and HIV-infection.

**Methodology:** A total of 32 primary care health facilities in Dar es Salaam and Kampala regions were randomised to either integrated or standard vertical care in a 1:1 ratio. In integrated care, services are organised from a single clinic where patients with either HIV-infection, diabetes, hypertension or combinations of these are managed by the same clinical and counselling teams. They all use the same pharmacy and laboratory and they have the same style of patient records. Standard care involves separate clinics, waiting areas, counselling areas, pharmacies and medical records.

INTE-AFRICA will measure both efficacy data in patients, health economics data and aggregated data at the health facility level. The trial has 2 primary endpoints: retention in care of people with HIV, hypertension and diabetes and plasma viral load suppression. Recruitment is expected to take 3-months and follow-up is for 12 months.

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**Results:** The trial is ongoing with 30 out of 32 facilities have started recruitment. Between July and October 2020, we screened 3,501 patients attending disease specific clinics and enrolled 2,275 (1987 living with HIV-infection, and 1288 with hypertension /diabetes conditions).

**Conclusion:** This is the only randomised trial of its kind evaluating a one-stop integrated clinic for common high-burden diseases in Africa, designed to generate policy-relevant evidence on the re-organisation of chronic care services in Africa.

**Recommendations:** The identification of a sustainable and effective integration model could lead to a substantial improved health services for these chronic conditions in resource poor settings.

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**Strategizing to strengthen surgical systems: The development of a National Surgical, Obstetric and Anesthesia Plan in Tanzania**

**Author:** Sarah Maongezi

**Background:** Conditions that are amenable to surgical and anesthesia care including trauma from road traffic accidents, cancers and obstructed labor contribute to a significant burden of disease in Tanzania. To address the lack of access to equitable, safe and timely surgical care in Tanzania, the Ministry of Health (MoH) has developed and launched its first National, Surgical, Obstetric and Anesthesia Plan (NSOAP).

**Methods:** The Tanzanian NSOAP was developed using a process and framework recommended by the Lancet Commission on Global Surgery (LCoGS) and the World Health Organization. The process consisted of seven major steps: MoH leadership, situation analysis, stakeholder engagement, priority setting workshop, writing workshop, costing and official launch. Priorities for strengthening the surgical system were set across six main domains of the LCoGS framework including workforce, equipment and supplies, service delivery, finance, governance and information management.

**Results:** The NSOAP development process was led by the MoH in consultation with over 200 representative stakeholders from professional societies, clinical providers, civil society, private and faith-based providers and patient organizations and took about one year to complete. The final plan is ambitious and attainable and aims to increase access to safe, timely and essential surgical and anesthesia care for all Tanzanians by 2025. It is designed to be comprehensive to address the needs of front-line care providers and patients. Key priorities include upgrading all current facilities with equipment and supplies necessary for safe surgery, increasing the surgical workforce density from 0.46 providers per 100,000 population to 2.27 per 100,00 population, strengthening referral and hospital information systems, increasing funding for surgical systems and establishing accountability around surgical care at all levels of care. Over 7 years, the NSOAP is estimated to cost about \$600 million USD which is approximately \$1.51 per capita per year and 0.62% of annual government budget.

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**Lessons learned:** In developing this NSOAP, the MoH of Tanzania has taken a critical step in addressing the high mortality and morbidity resulting for conditions amenable to surgical and anesthesia care in Tanzania. Further advocacy is needed to mobilize additional funding and partnerships to realize the implementation of this plan. The NSOAP development process in Tanzania provides a roadmap that other countries could take in developing similar plans to address surgical disease burden across the world.

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**Unit costs and its drivers for diabetes mellitus, hypertension and trauma treated in emergency department of muhimbili national referral hospital in dar es salaam Tanzania**

**Authors:** Ringo Millen, Mujinja Phares

**Affiliation:** Muhimbili National Hospital, Muhimbili University of Health and Allied Sciences

**Background:** Lack of economic evaluation especially unit cost analysis in delivery of hospital services in Africa developing countries including Tanzania's most public hospitals has led to poor resource allocation (budgeting and pricing). This is mainly caused by unawareness of importance of unit costs and lack of costing experts, lack of expertise in the use of information related to economic evaluation in operating public hospitals

**Aim:** To evaluate the unit costs of Diabetes Mellitus, Hypertension and Trauma treatment and their drivers in Emergency Department in Muhimbili National Hospital

**Methodology:** A cross-sectional descriptive hospital-based study was carried out from July to September 2020 in Emergency Department of Muhimbili National Hospital in Dar Es Salaam Tanzania. Both qualitative and quantitative data collection methods were used. Costing of materials, diagnosis and invested time were studied where patient's electronic files and key informants were the source of costing information. Department Wellsoft software was used to collect patient's costs of treatment information while six key informants interviews were conducted using a guide to explore opinions on drivers of cost. Data analysis was done using Microsoft excel for quantitative data while qualitative data was manually analyzed.

**Results:** Estimated unit cost for treating diabetes mellitus was found to be TZS 272,831; hypertension TZS 165,465 and trauma is TZS 208,441. Cost drivers as per provides perspective included: service growth, new technologies, medical personnel costs, emergency policy, non-paying patients and population health

**Conclusion:** Unit cost for providing treatment to diabetic, hypertensive patients at emergency department at Muhimbili national referral hospital is high.

**Recommendations:** Annual unit cost studies should precede budgeting and pricing for services offered by the department so as to optimize cost of providing services. Prioritizing preventive services especially annual health checks could lower curative services costs significantly. Studies on patient's perspective will provide another perspective so as to have comprehensive view from both providers and recipients of services in the critical department.

**Finding the Invisible Child; A call to Action, A Case of a Newborn with Critical Congenital Heart Disease**

**Authors:** Naizihijwa M, Godwin S, Vivienne M, Stella M, Deo N, Sulende K, Martin S, Rick Grobbee, Janabi M, Chillo P.

**Affiliation:** Jakaya Kikwete Cardiac Institute

**Background:** Congenital heart diseases (CHD) are the leading causes of birth defects worldwide, occurring in up to 9/1000 births. Nearly 25% of CHD are described as Critical Congenital Heart Disease (CCHD), requiring early diagnosis and intervention to prevent mortality. Around 14,600 children are born with CHD annually in Tanzania of those 4,000 have CCHD (extrapolated data). Newborn screening with Pulse Oximetry (POX) is recommended to timely identify CCHD before discharge. POX screening is universally practiced in developed countries, allowing timely identification/intervention of New-born with CCHD before discharged from Birth hospitalized hospital. This, however, has not been practiced in many African countries, including Tanzania, where the prevalence and the associated factors of CCHD, and the usefulness of the POX for CCHD not described. Tanzania through JKCI has operated on children with CHD since 2015, to date over 1000 children have received their lifesaving procedures at JKCI, Amongst the challenges are late presentations of children with CHD, leads to complications, suboptimal results, and at times impossible to intervene situation. Neonates are missed Among the intervened Cohort, as CCHD need Interventions at appropriate times, finding these children early will mean saving their lives and is cost effective. Congenital Heart Disease is a Global emerging Childhood health Problem.

**Aim:** To determining the magnitude, associated factors, and outcome of CCHD among new-borns in a Tanzanian cohort.

**Methodology:** A pilot project in collaboration between Utrecht Netherlands, MUHAS, MNH, and JKCI, since Sept.2020 all new-borns at MNH, are screened for CCHD using POX at 24 hrs of birth/ immediately before discharge. New-born with positive POX gets a determination of the type of CCHD with Echocardiography at JKCI. New-borns found to have CCHD are managed at JKCI, and their one-year clinical outcome and survival assessed. Mothers, New-born and fathers are assessed for risk factors.

**Results:** The Pilot Project is in Process, it is a 2 years Pilot study. The pattern of distribution of CCHD in Newborn is being described. Timely identification of infants with CCHD for management at JKCI Instituted. We describe risk factors for CCHD. We will analyze the feasibility of scaling up newborn screening for congenital heart diseases throughout the country. Initiation of Database for CHD in the country for Disease Surveillance.

**Conclusion:** CCHD is Invisible, it can easily escape detection at birth. It commands immediate attention, delayed treatment leads to permanent disability/deaths. Early detection is of paramount importance. It is an NCD that does not fit in the traditional NCD control strategies and a childhood illness that cannot be improved by nutrition or eliminated by

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vaccines. Screening with POX at birth therefore is life saving and finding the invisible child is a Call to Action.

**Recommendations:** Neonatal POX screening for CCHD disease in an inexpensive tool; readily available and could be integrated into the existing referral systems for disease surveillance in the country, should be used if we are to realize the UN- call of ending Preventable Deaths of newborn and children from Communicable Disease by 2030.

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**Clinical impact of a guideline implementation strategy on breast cancer management at a national cancer referral centre in tanzania**

**Authors:** Mvungi N, Ndumbalo J, Ngoma M, Zhang L, DeBoer R, Selekwana M, Mushi B, Philipo GS, Meena S, Nyagabona SK, Lin T, Mwaiselage J, Mmbaga EJ, Van Loon K, Buckle GC

**Affiliation:** Ocean Road Cancer Institute, Muhimbili University of Health and Allied Sciences, University of California, San Francisco

**Background:** Low-income countries (LICs) face a growing burden of cancer and a pressing need to strengthen cancer care delivery systems. In 2020, Tanzania's Ministry of Health commissioned the country's first National Cancer Treatment Guidelines to standardize treatment for all cancers across the country. In coordination with this initiative, Ocean Road Cancer Institute (ORCI), the national cancer referral center, is piloting an innovative theory-informed guideline implementation strategy. We present a novel framework for evaluating the effect of this implementation strategy on the provision of guideline concordant breast cancer (BC) care and clinical outcomes at ORCI. BC was chosen given the high burden of disease in Tanzania, historic variability in practice patterns and curability of a subset of patients. We hypothesize that the implementation strategy will promote uptake of the Tanzania Cancer Treatment Guidelines among oncologists at ORCI and increase the proportion of patients receiving guideline concordant care.

**Aim:** To evaluate the effectiveness of a theory-driven implementation strategy on facilitating uptake of guideline-based practice at ORCI using a within-site, pre-post design focused on BC care.

**Methodology:** This study is being carried out through a two-phase study design comparing clinical practice metrics and patient outcomes pre- and post-guideline implementation. The pre-intervention phase is comprised of a retrospective review of all BC cases seen at ORCI from 2016 to 2019. During the post-intervention phase, we are prospectively assessing all BC cases seen at ORCI following dissemination of the Tanzania National Cancer Treatment Guidelines and initiation of ORCI's implementation strategy. Data are collected on clinical and demographic characteristics, treatments prescribed and received, and overall survival. Guideline concordance will be assessed using pre-specified criteria.

**Results:** We developed a novel methodology for evaluating the clinical effects of a guideline implementation strategy. We will measure guideline concordance using internationally-recognized quality metrics and evaluate survival of BC patients at ORCI pre- and post-intervention. Preliminary results of the clinical data analysis will be presented

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**Conclusion:** Improving adherence to standard treatment guidelines is an essential component of addressing global disparities in cancer mortality. Though several international groups have developed resource-stratified cancer treatment guidelines, little research has been published on best practices for guideline implementation, particularly in Africa.

**Recommendations:** Evaluation of the clinical effect of guideline implementation strategies is key to establishment of best practices.

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**Tanzania Health Policy gap analysis and its effectiveness on NCDs risk factors and inclusion of UHC act toward preventions, care and treatment**

**Authors:** Waziri Ndonde, Lutgard K Kagaruki, Hilda Misano, Josephine Maliaki, Happy Nchimbi, Macca Mrina

**Affiliation:** Tanzania NCD Alliance

**Background:** Tanzania Health Policy 2007 outlines the achievements and challenges facing the health sector. The aim is to improve health for all especially those at risk and increase life expectancy by providing health service that meets the needs of the population in prevention and control of CDs and NCDs resulting from risk factors in view of this TANCDA conducted a review of the health Policy document and it is related strategic and plan documents(1-2)

**Aim:** To conduct “gap analysis” on health systems, policies and stakeholders in relation to NCD prevention, diagnosis & care for the inclusion of NCDs in Universal Health Coverage.

**Methodology:** We performed desk reviews of Tanzania Health Policy 2007 and its related documents on strategies, Plans, regulations, and some Acts. A pre-designed gap analysis questionnaire was used to collect data on performance and outcome indicators. A composite SWOT analysis of Tanzania Health Policy 2007 and different strategies and guidelines documents were used as a gadget to measure success/failure. All data were coded appropriately into either discrete or continuous variables for quantitative interpretations.

**Results:** After analyzed data the following were found; Lack of effective legislation, to backup NCDs strategic plan which has more emphasis on diseases than risk factors, Nutrition as a risk factor has not been addressed comprehensively, Policy focus more on addressing micronutrient deficiencies. For example on National School Health Program -While nutrition and physical activity are reasonable addressed, other risk factors are not well articulated; While the roles of different stakeholders are clearly spelled out, those of CSOs are not

**Conclusion:** Review indicated that, although there were many policies and guidelines relating to communicable diseases, few addressed NCDs and their risk factors and, the majority were outdated. There is a need for reviewing these policies, to ensure the inclusion of NCDs and their risk factors to enhance the successful implementation of UHC law

**Recommendations:** To effectively control NCDs and their risk factors, the following main recommendations are proposed:

- i. Review all policies to ensure the inclusion of NCDs and their risk factors in the UHC Act

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- ii. Enact effective tobacco and alcohol control laws to enhance their enforcement
  - iii. Enact FCTC compliant tobacco control law
  - iv. Put in place an effective enforcement mechanism
  - v. Develop a package addressing NCD issues for inclusion in Review of NHP and incorporate NCDs and risk factors
  - vi. Include interventions which will address nutrition in the life circle pointing out issues linked to NCDs at different stages
  - vii. Review Guideline to ensure inclusion of CSOs and risk factors
  - viii. The National HealthProgram should address the advocacy on NCDs in Schools
- 

**Theme: Ncd Risk Factors****H3Africa multi-centre study of the prevalence and environmental and genetic determinants of type 2 diabetes in sub-Saharan Africa (SSA)**

**Authors:** H3a Diabetes Study Group

**Affiliation:** H3A Diabetes Study Group/ H3A Consortium

**Presenting Author:** Dr Mary Mayige.

**Background:** The burden and aetiology of type 2 diabetes (T2D) and its microvascular complications may be influenced by varying behavioral and lifestyle environments as well as by genetic susceptibility. These aspects of the epidemiology of T2D have not been reliably clarified in sub-Saharan Africa (SSA), highlighting the need for context-specific epidemiological studies with the statistical resolution to inform potential preventative and therapeutic strategies.

**Aim:** (1) To assess the burden, spectrum, and environmental and genetic determinants of T2D among adults in SSA. (2) To characterize the prevalence, distribution, and environmental and genetic determinants of microvascular complications of diabetes among adults with T2D in SSA.

**Methodology:** A multi-site study comprising a case- series/clinic (known T2D) and population-based survey arm at each of 11 sites in eight countries across SSA. The estimated sample size was 12,621. Questionnaire data, biophysical measurements and biological samples for chronic disease traits, risk factors and genetic data were collected on all study participants using standardized protocols (<https://doi.org/10.1017/gheg.2015.6>).

**Results:** The reported study is still on- going and preliminary findings are presented.

**Conclusion:** This study creates a large-scale epidemiological and genomic research framework for improving our understanding of the burden and risk factors for diabetes, which will inform health service planning and prevention strategies across Africa. The study also provides insights into the molecular and pathophysiological basis of diabetes in African populations and hence contribute to medical genomics efforts globally.

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**Recommendations:** The study will help fill the gap on the etiology of diabetes and its related complications, more investment is needed to investigate therapeutic and prevention strategies to curb the burden of diabetes and related complications.

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**'Symbolizing diabetes': perceptions and experience of type 2 diabetes risk factors and prevention among communities in Bagamoyo Tanzania"**

**Authors:** 1. Dr. Sally Mtenga, 2. Maria Bissett, 3. Prof. Cindy Gray, Culture and Body Group

**Affiliation:** 1. Ifakara Health Institute, 2. University of Glasgow, 3. University of Glasgow

**Background:** Type 2 diabetes (T2D) is a major public health challenge in Tanzania. To date, there is limited understanding of the personalized perceptions and experiences of T2D risk factors and prevention measures, which is essential to inform relevant T2D management and prevention strategies.

**Aim:** To explore personal experiences, social norms and cultural beliefs in relation to T2D risk factors and prevention

**Methodology:** Participants were recruited through convenience sampling from the peri-urban area of Bagamoyo, Tanzania. Primary data collection involved single-gender focus group discussions (FGD) to explore local perceptions, and attitudes to health and NCDs, and single-gender creative arts-based workshops (ABW) to explore personalized experience, and local behavioral drivers of T2D and opportunities for prevention. Thematic framework analysis was used to analyse ABW and FGD transcripts.

**Results:** Participants used imaginative and symbolic language to communicate deep fears and negative beliefs about T2D. Participants were also generally knowledgeable about the risk factors for T2D including overconsumption of sugar, lack of exercise, and long-term impacts such as amputation. Barriers to prevention frequently emerged, including a cultural appreciation of salty and oily foods (rojo rojo food), perceptions of laziness in relation to physical activity in the community, as well as financial barriers to accessing healthy food, limited open spaces for exercises, and health system barriers relating to accessing diabetes testing and treatment.

**Conclusion:** People in Bagamoyo are both aware of and concerned about T2D; however, there is a disconnect between knowledge of risk factors and the reality of prevention behaviors.

**Recommendations:** Promotion of healthy lifestyle especially focusing on reduction of sugar, oil, salt intake, and prevention education on diabetes should be emphasized. Strategies for reducing the cost of healthy foods should be emphasized as well as improving availability of services for testing and treating diabetes mellitus.

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**OPEN ACCESS JOURNAL****Prevalence and correlates of cardio-metabolic risk factors among regular street food consumers in Dar es Salaam, Tanzania**

**Authors:** Gibson B Kagaruki, 1, 2 Michael J Mahande, 2 Godfather D Kimaro<sup>3</sup>, Esther S Ngadaya<sup>3</sup>, Mary T Mayige<sup>4</sup>, Majige Selemani<sup>5</sup>, Lindsay M Jaacks<sup>6</sup>, Shabbar Jaffar<sup>7</sup>, Sayoki G Mfinanga<sup>3, 9</sup>, Bonfoh Bassirou<sup>8</sup>

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**Background:** Background: Regular street food consumers in Africa are at an increased risk of unhealthy eating practices, which have been associated with an intermediate (cardio-metabolic) risk factors of cardio-metabolic diseases. However, the knowledge on the magnitude and correlates of these risk factors is limited in Tanzania. This study aimed to elucidate the situation among regular street food consumers in Dar-es-Salaam.

**Aim:** To determine the prevalence and correlates of cardio-metabolic risk factors among regular street food consumers in Dar es Salaam, Tanzania

**Methodology:** A cross-sectional study was carried out among 560 regular consumers of street food in three districts of Dar es Salaam city between July and September 2018 in Tanzania. Information on socio-economic factors and demographics, behavioral risks, anthropometric and biochemical indicators was collected. Both adjusted odds and prevalence ratios were estimated using multivariable binary logistic and modified Poisson regression models.

**Results:** On average, participants consumed 11 street food meals per week per person. The prevalence for four cardio-metabolic risk factors was 64% (60.6-69.9%) for overweight/obese, 42.5% (38.3-46.9%) for raised BP, 13.5% (10.9-16.8%) for raised blood triglycerides and 6.6% (4.9-9.3%) for raised glucose levels. The correlates of overweight or obese were female sex (APR=1.3; 95%CI 1.2-1.5), age of 41-64 years (APR=1.4; 95%CI 1.2-1.6), high income (APR=1.2; 95%CI 1.04-1.3), being married/cohabiting (APR=1.2; 95%CI 1.01-1.4) and family history of diabetes (APR=1.2; 95%CI 1.01-1.3). Other correlates were consumption of recommended servings of fruits/vegetables per week (APR=1.1; 95%CI 1.03-1.2) and non-smoking (APR=1.3; 95%CI 1.03-1.6). The only significant factor associated with raised blood pressure, raised blood glucose and raised triglycerides was age (41-64 years); (APR=2.3; 95%CI 1.8-2.9, AOR=3.8; 95%CI 1.4-10.2 and APR=2.3; 95%CI 1.8-2.9, respectively).

**Conclusion:** Our study revealed that street food consumers are at risk of cardio-metabolic health problems, especially women, middle-aged people and those with expendable income.

**Recommendations:** Transdisciplinary studies to understand and explain the root behaviors are needed in order to inform perspective interventions that can mitigate the risk of

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developing cardio-metabolic diseases. These interventions should target both street food vendors and their consumers.

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**Prevalence and factors associated with renal dysfunction among HIV infected children in Dodoma Tanzania**

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**Background:** Human Immunodeficiency Virus (HIV) infection is a multisystemic disease that contributes to significant morbidity and mortality. Renal involvement is reported to be common among patients with HIV. This study was carried out to determine renal involvement using simple bedside tests combined with ultrasonographic examination. However, there is rising incidence and prevalence of the kidney failure and is more prevalent in the elderly population despite younger patients with the Chronic Kidney Disease (CKD) typically experiencing progressive loss of the kidney function, associated with increased risk of cardiovascular diseases as well.

**Objectives/Aims:** To determine the prevalence and factors associated with renal dysfunction among HIV infected children attending HIV clinic at Dodoma Regional Referral Hospital.

**Methodology:** A Cross-sectional study was carried out; a total number of 236 children infected with HIV were recruited at Dodoma Regional Referral Hospital and Makole Urban Health Centre. The study population included children with HIV/AIDS aged less than 15 years whether on or not on Highly Active Antiretroviral Therapy (HAART) regimen. The entire study duration was carried out for the period of six months.

**Results:** The prevalence of renal dysfunction among boys and girls with HIV infection were 52.5% and 47.5%, respectively; among those below 5 years was 39.8% and among above of five (5) years of the age recruited was 60.2%. The association of the number of the infected children with renal dysfunction prevalence was 56% and The association between HIV with the renal dysfunction with the estimated Glomerular Filtration (eGFR) of below <60ml/min of the patient recruited below five years were 7.6% and above 5< Years of Age recruited were 80.8% with significantly P Value <0.001. Enrolled Children with Proteinuria investigated accounted for 20.5 %. A similar study was conducted at Muhimbili National Hospital by Fredrick et al which correlated with our study findings. Proportional of the children with anemia accounting for renal dysfunction was 91.7% with significance P Value < 0.019.

**Conclusion:** Renal dysfunction poses a significant burden among children with HIV. Poor drug adherence, malnutrition and anemia were the factors associated with renal dysfunction.

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**Recommendations:** Public awareness enhancement may encourage children with HIV infection to adhere to prescribed antiretroviral medications regimen so as to reduce viral load and prevent risk of renal dysfunction in the future.

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**The role of sickle cell trait status on physical activity, glucose and blood pressure in people living with and without HIV in Tanzania**

**Authors:** Belinda Kweka, Fredrick Cyprian Mwita, George PrayGod

**Affiliation:** National Institute for Medical Research, Mwanza, Tanzania

**Background:** Physical activity is known to reduce the risk of Non-Communicable Diseases (NCDs), but, among sickle cell trait (SCT) carriers exercise may trigger uncomfortable experiences leading to reduced level of physical activity and a risk of a higher burden of NCDs

**Aim:** This study aimed to investigate the role of SCT status on physical activity, glucose level and blood pressure among HIV-uninfected and-infected populations in Mwanza.

**Methodology:** This was a cross-sectional study conducted from July-2019 to July-2020. Social demographic and subjective physical activity data were collected using questionnaires. Physical activity energy expenditure, sleeping heart rate, maximum oxygen uptake and average acceleration (ACC) were objective measures of physical activity collected using combined heart rate and accelerometer monitor. Blood pressure data were collected using standard methods. Blood was drawn for assessment of fasting, 30 min and 120 min glucose, HIV, insulin and SCT/SCD status. Insulinogenic index and HOMA-IR were used to categories' Insulin function as normal,  $\beta$ -cell dysfunction, insulin resistance, and combined  $\beta$ -cell dysfunction and insulin resistance. Multiple linear regressions were used to assess associations between SCT with physical activity, blood glucose and blood pressure while multinomial regression assessed the association of SCT with insulin function. Results were presented by HIV treatment status.

**Results:** Data for 652 participants were analyzed. The mean age was 40 (SD 11.5) years; 61.7% were females and 64.7% were HIV-infected. 157/652 (24.1%) had SCT and none had SCD. Among HIV-uninfected participants, SCT was associated with lower ACC (-0.04 ms<sup>-2</sup>, 95 % CI: -0.08, -0.006) and in HIV-infected participants on antiretroviral therapy (ART), SCT was associated with higher 30-min glucose (1.3 mmol/L, 95 % CI: 0.09, 2.5) while fasting and 120 min glucose were marginally significant higher ((0.7 mmol/L, 95 % CI: -0.07, 1.5, P=0.08) and (0.7 mmol/L, 95 % CI: -0.1, 2.8, P=0.07), respectively). Furthermore, individuals with SCT had significant higher risk of  $\beta$ -cell dysfunction (RRR=1.8, 95 % CI: 1.1, 3, P=0.02). There were no associations of SCT with blood pressure

**Conclusion:** SCT was associated with reduced physical activity among HIV uninfected participants and higher risk of hyperglycemia among HIV-infected participants on ART. Interestingly, SCT was also associated with reduced  $\beta$ -cell function irrespective of HIV status

**Recommendations:** Larger studies are needed to understand the long-term effect of SCT status on diabetes particularly among individuals with HIV infection.

**Risk Factors, clinical patterns and 30-days outcomes of patients with stroke admitted at referral hospitals in Dodoma, Tanzania****Authors:** Anna Chongolo, Furaha Malecela, John Meda, Azan Nyundo**Affiliation:** Department of Clinical Medicine, College of Health Science, The University of Dodoma, Department of Radiology, Benjamin Mkapa Hospital, Kibong'oto infectious disease Hospital.**Background:** Stroke remains to be the main community health problem in the world today (Roger et al., 2015). Globally, stroke is among the major cause of disability for about 4.5% of the casualties (Disability Adjusted Life Years (DALYs) and the second most common cause of death following ischemic heart disease accounting for 11.85% of all deaths (Ekeh et al,2009), Most of these deaths occur in developing countries that account for about 87% of all stroke deaths (Ekeh et al., 2015). Moreover, the update from the Global Burden of Disease (GBD) reported of almost 25.7 million stroke survivors (71% with Ischemic Stroke), 6.5 million death from stroke (51% died from Ischemic Stroke), and 10.3 million new strokes (67.5% IS). There was a significant increase in Disability-adjusted life years (DALYs) due to IS and death due to IS and HS (Feigin et al., 2015).

Globally, a rates of ischemic stroke are higher to hemorrhagic stroke 78%vs 22% (Krishnamurthy et al., 2013; M. J. O'Donnell et al., 2010), also found in SSA. In Tanzania, one study found 60% of haemorrhagic and 40% infarcts and the majority of patients were hypertensive (W. Matuja, Janabi, Kazema, &amp; Mashuke, 2004). The common presentations following stroke are headache, vomiting, convulsions which were more prevalent to haemorrhagic (An, Kim, &amp; Yoon, 2017), the majority had a neurological deficit, loss of consciousness, dysarthria, and aphasia (S.Matuja et al).

In high-income countries, the thirty days of stroke mortality have been reported to decrease by 37% from 58 studies but the overall global burden of stroke (DALYs lost) has greatly increased (Haro et al., 2014). The major risk factors for the stroke poor outcome were advanced age &gt; 70 years and infections. However, in Sub-Saharan Africa (SSA), the predictors of stroke outcomes are advanced age &gt;65years, stroke severity, infections, and atrial fibrillation (Alkali et al).There are little prospective studies that have been done to assess the outcomes of stroke and survival amongst patients who attended Tanzanian community hospitals.

**Broad objective:** To describe the risk factors, clinical patterns, and post-stroke outcomes among adult patients admitted at Dodoma regional referral and Benjamin Mkapa Hospital in Dodoma from February to July 2020.**Methodology:** This is a prospective observational longitudinal study, based on follow-up in which patients were followed for thirty days from the day of admission in four-period intervals of 24 hours, day 7, day14, and day 30.Estimated sample size was 142 patients. Consecutive sampling method was used. Study Procedure:Participant Interview, Clinical

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Examination (Blood Pressure Measurement, pulse rate and oxygen saturation), Waist circumference measurements.

Data Processing and Analysis: Mean, median, standard deviation, IQR and frequency were used to describe the sample and the characteristics of the participants. Chi-square test was used to assess baseline characteristics of stroke patients and association between Outcome in 30 days and Stroke severity. A multinomial logistic regression model was used to determine factors associated with the status of outcome of stroke in 30 days.

**Results:** The mean  $\pm$  standard deviation age at admission was  $65.6 \pm 15.3$ .

The majority had hypertension 127(88%) alone while only 9 (6.25%) patients had dual comorbidities of hypertension and diabetes. The major common stroke subtype was an ischemic stroke of 92(63.89%) patients while hemorrhagic stroke was 52 (36.11%) patients. The most common site affected was on the left 77(53.47%), which involved the cortical part of the brain and accounted for 95(65.97%). The decision on treatment modalities depends much on the categorization of stroke subtypes and it is important in projecting the outcome. Majority of patients 141 (97.9%) had limb weakness Aphasia: 97(67.3%), among these 54 (55.7%) recovered with or without neurological deficit while 43 (44.3%) died within thirty days. Patients who presented with a headache on admission were 89 (61%), amongst them, 63 (70.8%) recovered while 26 (29.2%) died in the first-week post-stroke onset. Seventy-two cases (50%) had a loss of consciousness on admission, 40 (55.5%) died and 32 (44.4%) recovered within thirty days. 37 (25.69%) had vomiting, seizure, and aspiration pneumonia with the same number of cases that improved after thirty days except for aspiration pneumonia 32 (86.4%) died. The mean total cholesterol was 6.042 mmol/l (1.701) with the IQR of 1. Mean Haemoglobin of 12.6g/dl. Leukocytosis of  $>30 \times 10^3/uL$  was observed in some cases that had infections and associated with poor outcome at thirty days. Absolute neutrophil count was elevated to some of the patients of  $>20 \times 10^9/uL$  mostly associated with infection and resulted in poor outcomes. Thrombocytopenia of a minimum of  $20 \times 10^9/L$  was observed more in patients with hemorrhagic stroke and thrombocytosis of maximum value was observed in patients with ischemic stroke. Stroke Outcomes: 14 (9.72%) had a full recovery, 82(56.94%) had recovery with neurological deficit, and 48 (33.33%) death. About 31 (21.5%) of death occurred in the first week after stroke onset. The common identified complication was aspiration pneumonia 37 (25.69%). The common identified complication was aspiration pneumonia 37 (25.69%). It was noted that the outcome was significantly associated with Stroke severity ( $p < .0001$ ). More than half of our patients had moderate stroke with good outcome (with or without neurological deficit).

Predictors of Stroke Outcomes: older age  $>65$  years {OR 0.175 (95% CI: 0.046-0.670)}. No formal education {OR 38.00 (95% CI: 3.305-436.934)} and severe stroke {OR 4.104 (95% CI: 2.493-6.756)} Association between Clinical Presentation and Stroke Outcome:

In an unadjusted multinomial analysis, it was found that patients who presented with ischemic stroke ( $p=0.047$ ) were less likely to die compared to Haemorrhagic stroke and were less likely to recover with neurological deficit. Those who presented with aphasia {OR 30.67

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(95%CI: 5.23,179.62)}, loss of consciousness (OR 65.00 (95%CI: 7.41,569.84)), focal neurological deficit {OR 9.28 (95% CI: 1.12, 76.84)}, and aspiration pneumonia {OR 12.99 (95% CI: 1.57,107.18)} were increased odds of death within thirty days in reference to full recovery category. In an adjusted multinomial, we noted that, patients who presented with loss of consciousness {AOR 36.73 (95% CI: 2.36, 571.78)} were increased odds of death and for the survivors were increased the odds of recovery with neurological deficit.

**Conclusion:** The major risk factors for stroke outcomes were hypertension (94.44%) as the majority of our study participants were not on hypertensive treatment during the stroke event, and heart failure (93%) was more noticeable in the ischemic type of stroke with poor outcome. Blood pressure control is vital for stroke complication reduction. The clinical presentations observed during admission were limb weakness aphasia and loss of consciousness.

**Recommendations**

- i. Aggressive control of hypertension at the level of primary secondary and tertiary healthcare is of paramount significance. Establishing specialized stroke units in referral hospitals in Dodoma is vital for early patient evaluation, identification, and complication management to prevent early stroke-related to mortality and disability.
- ii. Establishing of post-stroke rehabilitation units to improve post-stroke quality of life.

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**Theme: Ncd Burden and Trends****Burden of non-communicable disease comorbidities among people living with HIV in Tanzania: Need for innovation in service delivery**

**Authors:** Faraja Chiwanga1\*, Samuel Likindikoki2, Jesse Mbwambo1,2, Michael Sweat3 and Virginia Fonner4

**Institution:** Muhimbili National Hospital, Muhimbili University of Health and Allied Sciences, Medical University of South Carolina

**Background:** Noncommunicable diseases, specifically diabetes and hypertension, are increasing among people living with HIV. These comorbid conditions impact disease management and could increase negative health outcomes.

**Aim:** We aimed to understand how well diabetes and hypertension are controlled among HIV-positive patients attending a large care and treatment clinic (CTC) of a tertiary hospital in Tanzania.

**Methodology:** We surveyed 359 adult HIV-positive patients recruited through systematic sampling of every third patient attending a large tertiary CTC in Dar es Salaam Tanzania. A structured questionnaire was used to collect socio-demographic and self-reported disease status for diabetes and hypertension. We measured weight, height and blood pressure (BP) using standard protocols. Blood glucose (fasting (FBG) or random (RBG)) was measured using glucose meters. Patients were classified into diabetes and hypertension categories using international guideline definitions.

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**Results:** Participants were predominantly female (277/359), the mean age was 45.8 (SD=9.8) and a majority reported clinic attendance for  $\geq 5$  years (71.8%). Diabetes prevalence (self-report or FBG  $> 7.0$  mmol/l) was 3.9% (14/359). All 14 patients with diabetes knew their status and 13/14 had uncontrolled blood glucose (FBG  $> 6.0$  mmol/l or RBG of  $\geq 10.0$  mmol/l), despite 71% (10/14) self-reported being on treatment for diabetes. The prevalence of pre-diabetes (FBG between 6.1 and 6.9 mmol/l) was 12.2 (6/49) among participants with no history of diabetes and 11.4% (4/35) among those who had never had their blood glucose checked. Overall hypertension prevalence was 26.4% (self-report or systolic BP  $\geq 140$  mmHg and/or diastolic BP  $\geq 90$  mmHg) and pre-hypertension was present in 36.9% (133/359). Fifty-five participants were aware of their hypertension and of these 41.8% (23/55) were on treatment. Among these systolic BP was  $\geq 140$  mmHg in 56.4% (31/55) and diastolic BP  $\geq 90$  mmHg in 34.5%, and both systolic and diastolic BP measurements were uncontrolled in 30.9% (17/55). Eight participants (2.2%) had both diabetes and hypertension, in addition to HIV.

**Conclusion:** Many HIV-positive patients with diabetes and hypertension were aware of their comorbid non-communicable conditions, but these conditions were not well controlled.

**Recommendations:** With improvement in survival among patients with HIV, and the increased risk factors for non-communicable diseases, innovative methods of delivering services to HIV-positive patients, such as integration with NCD services, are urgently needed to ensure a holistic approach.

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**Burden of modifiable risk factors and prevalence of non-communicable diseases among the community of Dar es salaam, Tanzania.**

**Author:** Digna Narciss Riwa

**Background:** Non-communicable diseases (NCDs) are the leading cause of death worldwide, killing 41 million people each year. Diabetes, cardiovascular diseases, cancers and respiratory conditions are the top four killers.

**The objective** of this study was to determine the burden of modifiable risk factors and prevalence of NCDs among the community of Dar es Salaam Region in Tanzania. **Methods:** This study was conducted in Keko, Kigamboni, Temeke, Ubungo, Mwananyamala, Vijibweni and Mbagala areas of Dar es Salaam. Individuals,  $> 15$  years old were randomly selected and screened for blood pressure, blood sugar and body-mass index (BMI). Socio-demographic information of the subjects was collected using a standardized questionnaire.

**Results:** Out of 1,939 people screened 29.6% had hypertension and 5.5% had diabetes, both were increasing with age. Diabetes found to have higher rates in Vijibweni and Temeke while hypertension had higher rates in Ubungo. We found there was no sex difference in both diabetes and hypertension. Hypertension had a good correlation with weight gain as 38.8% of the obese people had hypertension and 7.6% who were underweight had diabetes and those with obese/overweight had higher rates of diabetes.

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**Conclusion:** Sustainable efforts are required to identify the risks factors and lower the burden of NCDs at the community in the region, with a provision of reliable assessment and inform prevention and control strategies.

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**Prevalence of non-communicable diseases among individuals with HIV infection by antiretroviral therapy status in Dar es Salaam**

**Authors:** Irene Kato, **Basil Tumaini**, Kisali Pallangyo

**Affiliation:** Department of Internal Medicine, Muhimbili University of Health and Allied Sciences

**Background:** Long-term antiretroviral therapy has modified the clinical course of HIV infection to a chronic condition associated with increased risk of developing non-communicable diseases (NCDs). Information is scant, from sub-Saharan Africa, on the prevalence of NCDs and associated factors among individuals on ART.

**Aim:** To determine the prevalence of selected NCDs and associated factors among individuals with HIV infection on long-term ART ( $\geq 5$  years) compared to ART naïve subjects receiving health care facility services in Dar es Salaam.

**Methodology:** We consecutively enrolled individuals with HIV infection who were ART naïve and those on ART for  $\geq 5$  years (LTART) attending health facilities in Dar es Salaam. Participant's blood pressure, anthropometric measurements, and fasting blood glucose were recorded. Participants with impaired fasting blood glucose underwent an oral glucose tolerance test. A venous blood sample was sent to the lab for biochemical tests. Chi-square test was used to compare proportions; modified Poisson regression was used to determine associations between variables.

**Results:** Overall, 612 individuals with HIV infection were enrolled, half of whom were ART naïve. Females comprised 71.9% and 68.0% of participants in the LTART and ART naïve study arms, respectively,  $p = 0.290$ . The mean age ( $\pm$ SD) was  $44.9 \pm 12.7$  years and  $37.5 \pm 11.8$  years among LTART and ART naïve participants, respectively,  $p < 0.001$ . Hypertension was documented in 25.2% in those on LTART compared to 6.9% among ART naïve subjects,  $p < 0.001$ . Impaired glucose tolerance was found in 22.9% and 4.6% among LTART compared to ART naïve subjects,  $p < 0.001$ . Diabetes mellitus was detected in 17.0% of those on LTART compared to 3.9% ART naïve participants,  $p < 0.001$ . Hypercholesterolemia was found in 30.4% of individuals on LTART compared to 16.7% of ART naïve subjects,  $p < 0.001$ , and hypertriglyceridemia was found in 16.0% of participants on LTART compared to 9.5% of ART naïve,  $p = 0.015$ . LTART use, age  $\geq 40$  years, history of smoking, and body mass index were independently associated with NCDs.

**Conclusion:** Hypertension, impaired glucose tolerance, diabetes mellitus, hypercholesterolemia, and hypertriglyceridemia were associated with long-term use of antiretroviral drugs.

**Recommendations:** Individuals with HIV infection on long-term ART, especially those aged  $\geq 40$  years, require screening for NCDs.

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**OPEN ACCESS JOURNAL****Depression, Suicidality and associated Risk Factors among Police Officers in Urban, Tanzania; A Cross-Sectional Study****AUTHORS:** Belinda J Njiro, Harriet P Ndumwa, Thomas Kawala, Samuel Likindikoki**Affiliation:** Muhimbili University of Health and Allied Sciences**Background:** In 2020 WHO classified depression as a disease of public concern. Age, gender, profession, year at work, social and work-related factors have been reported as the risk factors for depression. Owing to the nature of their job, studies report that Police Officers are among the population at risk of mental health problems. However, there is a scarcity of information on the magnitude of depression and suicide among Police Officers from Sub-Saharan African countries.**Aim:** This study aimed to determine the prevalence of depression, suicidality and associated risk factors among Police Officers in urban Tanzania.**Methodology:** A cross-sectional study was conducted between November to December 2019 among Police officers in Dar es Salaam. A total of 497 participants were recruited using a multistage cluster sampling technique. A PHQ-9 screening tool was used to assess for depression and suicidality and Interpersonal support evaluation list-shortened version-12 items was used to measure perceived social support. Frequencies and percentages were used to summarise the results. Univariate and multivariate analyses were conducted to establish associations between predictors of interest and depression as well as suicide, a value of  $p < 0.05$  was considered significant.**Results:** Results: Out of 497 participants, 76.6% (376/491) were male, and the median (IQR) age was 37.0 (17) years. The prevalence of depression and suicidality among Police Officers was found to be 19.8% (96/486) and 15.4% (75/413) respectively. A third (30.2% (29/96)) of those who were depressed presented with moderate to severe depression and 10.7 % (8/75) of those with suicidality reported to have suicide ideation nearly every day. Following multivariate analysis, participants with primary level of education (aOR: 0.07, 95%CI; 0.008-0.698,  $p=0.02$ ) compared to those with tertiary level of education had decreased odds of having depression. Participants who reported higher level of perceived social support had decreased odds of depression (aOR: 0.04, 95%CI; 0.01-0.12,  $p=0.00$ ) and suicidal ideation (aOR: 0.10, 95%CI; 0.04 – 0.25,  $p=0.00$ ) compared with those who reported low level of perceived social support.**Conclusion:** The magnitude of depression and suicide among Police Officers in Urban Tanzania is alarmingly high. Levels of education and perceived social support are found to be associated with depression among Police Officers. High perceived social support was also found to be protective against suicidality among Police Officers.**Recommendations:** Periodic depression and suicide screening should be done and mental health responsive services should be put in place to prevent and treat depression and Suicide among Police Officers. Depression and suicidality among Police officers in Tanzania is under-researched, and being linked to several negative health and socio-economic outcomes, studies with a more methodological rigor approach need to be done to understand other additional predictors of depression among Police Officers.

**OPEN ACCESS JOURNAL****Patterns and causes of speech sound disorders among patients attending speech and language therapy clinic at muhimbili national hospital****Authors:** Amina Hassan**Affiliation:** Muhimbili University Of Health And Allied Science**Background:** Speech sound disorder is a communication disorder characterized by persistent difficulties in producing speech sound. It can involve phonological problems which is difficulties producing particular sound or difficulties with speech such as stuttering. Speech sound disorders can be Organic or Functional in nature. Example of speech sound disorders are apraxia,**Aim:** Broad objectives To determine patterns and causes of speech sound disorders among patients attending speech and language therapy clinic at MNH.**Methodology:** This descriptive cross –sectional study.**Results:** A total of 114 patients with SSD were recruited, 75(65.8%) were males while females were 39(34.2%) with M: F of 1.9:1. Most of the study population were in the age group of <5 years, 40 (35.1%). Their ages range was 2-80 years with median age of 8.5 years. Patients with more than 60 years of age were more affected by aphasia, 93.3% followed by age group 5-17 years 66.7% while dysarthria was predominant in age group of less than 5 years, dysphonia and aphasia equally occurred in the age group of 18-45 years by 50% each in the age group 46 to 60 years aphasia was 50% while dysphonia was 42.9% with the p value of 0.01 which was statically significant. Substitution and distortion were commonly seen in the age group of <5 years by 38.2% and 17.6% respectively which was statistically significant for substitution but not distortion. Repetition and addition were predominant in patients who were 5 years and above which was statistically significant for the repetition but not addition p value 0.05. Traumatic brain injury (100%) and stroke (81.5%) were seen as dominant causes of aphasia which was statistically significant in stroke but not in traumatic brain injury.**Conclusion:** This study has brought to light the fact that Speech sound disorder is a problem in our community and school age children are the most affected ones where in adults, it is seen to be common in stroke patients who presented with aphasia. The overall SSD was seen more in male compared to female by the ratio of 2:1. Functional speech sound disorder was 61.4% which was seen more in children and the cause was idiopathic while Organic speech sound disorder was 38.5% occurred mostly in Adult with stroke and traumatic brain injury.**Recommendations**

1. To emphasize routine screening of SSD to the community for early diagnosis and treatment.
2. Monitoring of at risk group like those with stroke, TBI, Sensorineural hearing loss.

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Theme: Prevention And Promotion

**The Impact of NCD is beyond the health sector where are the religious leaders?**

**Authors:** Manase Frank, Selis Tarimo, Janeth Kalinga, Said Mfaume, Rev. Alick Mpelu, Rev. Christosila Kalata, Emili Lihawa, Willy Sangu, Rev. Lewis Hiza, Joel Bwemero, Deborah Kalunga.

**Institution:** The Community Center for Preventive Medicine "CCPmedicine", MoH, Muhimbili Orthopedic Institute, CSSC.

**Background:** A continuous increase of incidence of non-communicable diseases (NCDs) is global health concern. Tanzania is among countries in African region with higher increasing rate of NCDs that affect people of all social economic status. Lack of evidence on effective ways of working with religious leaders is a barrier advance NCDs control strategies. Religious leaders and their congregations have important role in implementing NCDs preventive measures

**Aim:** To engage religious leaders in addressing the burden of non-communicable diseases.

**Methodology:** Religious leaders were empowered with basic knowledge on risk factors, control and management of NCDs. Through series of focus group discussions a mechanism of communicating health related issues among religious leaders and health care providers was put in place. Also mechanism of handling practical issues including referrals, consultations between the two professionals was established.

**Results:** Religious leaders and health professionals are properly positioned and do no longer perceive as being competitors when addressing NCDs related health problems. Religious leaders integrate health issues in their routine teachings and counseling sessions. Active bilateral referrals between health care providers and religious leaders are now reported.

**Conclusion:** Religious leaders have potential role that is yet to be explored in the global efforts to address the burden of NCDs. Our initial findings show that, it is possible to work collaboratively with religious leaders in order to reverse the unwanted health outcomes of NCDs.

**Recommendations:** Empower and engage religious leaders in addressing the burden of NCDs.

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**A randomized placebo-controlled double-blind phase II trial to determine the effects of metformin versus placebo on glycaemia in HIV-infected persons with pre-diabetes in Tanzania.**

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Organization, Mulago Hospital Complex, Kampala, Uganda 4. Hindu Mandal Hospital, Dar es Salaam, Tanzania 5. MRC/UVRI & LSHTM Uganda Research Unit, Entebbe, Uganda 6. London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT 7. Amana Regional Referral Hospital, Dar es Salaam, Tanzania

**Background:** An estimated 460 million adults worldwide were living with type 2 diabetes mellitus (hereon referred to as diabetes) in 2019, and this is rising rapidly. Studies in different populations have shown that 10-20% of subjects with prediabetes progress to clinical diabetes each year, and 70% of these individuals can expect to go on to develop overt diabetes during their lifetime. Metformin is the recommended first-line drug for persons with diabetes and HIV-infection in the UK, Africa and elsewhere. Based on the evidence, we believe that metformin is safe for use in HIV-infected individuals on ART who have prediabetes.

**Aim:** To conduct a phase II trial and generate the data needed to design a phase III trial.

**Methodology:** We are conducting a phase II randomised double-blind placebo-controlled trial to evaluate the use of metformin in HIV-positive persons on antiretroviral treatment (ART) with pre-diabetes. This study is designed to inform a phase III trial that will evaluate whether metformin can reduce the progression to diabetes and reduce adverse clinical events among this group. Eligible patients are HIV-infected adults on ART and confirmed to be pre-diabetic, using the Oral Glucose Tolerance Test (OGTT). We will randomise participants with no contraindications at the ratio of 1:1 to either the metformin or the placebo group. All patients will continue to take their ART. The study is based at Amana, Mwananyamala, Temeke and Hindu Mandal Hospitals in Dar es Salaam. Recruitment is estimated to be complete within a 90-day period. Each participant will be followed up for a duration of 12 months after recruitment.

The primary outcome measure is glycaemia at 12 months as ascertained by the OGTT. We will compare mean glycaemia between the metformin and control arm at 12 months in an intention-to-treat (ITT) analysis. Secondary endpoints will include changes in glycaemia from baseline, incidence of adverse events, rates of retention in care and estimated adherence to study drugs.

**Results:** Out Recruitment for the study participants started in on 4th November 2019 and ended on 24 July 2020. Overall, 1,279 patients living with HIV-infection were screened of whom 385 were eligible and 364 were enrolled. As of 20 September 2020, a total of 15 adverse events at grade 3 (12) grade 4 (1) or grade 5 (2) were reported. All 15 adverse events were unrelated or unlikely related to metformin. Most (10) were events detected at enrolment and remained until the week 2 visit made by patients (they had not deteriorated following enrolment into the study or start of the study drugs).

**Conclusion:** We envisage that; this phase II safety trial will generate the data needed to design a phase III trial.

**OPEN ACCESS JOURNAL****Physical activity practices and associated factors among university students in Kilimanjaro Region, Northern Tanzania**

**Authors:** Isaack E. Mdemu, Mariana B. Mikindo, Lindael G. Mlay, Elichilia Shao

**Affiliation:** I. Community Health Department, Institute of Public Health, Kilimanjaro Christian Medical University College, P. O. Box 2240, Moshi-Tanzania II. Department of Internal Medicine, Kilimanjaro Christian Medical University College, P. O. Box 2240, Moshi-Tanza

**Background:** Physical activeness is of paramount importance especially in preventing non-communicable diseases. The global record on physical inactivity indicates that it causes about 1.9 million preventable deaths per annum. Studies show that young people lag behind in physical activeness, and that more than half of University students are not active enough to gain health benefits. Studies to determine factors associated with physical activeness among University students are very key toward reduction of non-communicable diseases (NCDs).

**Aim:** To assess physical activity practices and associated factors among University students in Kilimanjaro region, Northern Tanzania.

**Methodology:** Analytical cross-sectional study and was conducted in August 2020. The study population was students in Universities of Kilimanjaro region aged between 18-35. Interview using questionnaire was used for data collection. Data was entered and analyzed using SPSS version 20.

**Results:** A total of 514 participants were enrolled in this study. 53.9% were males and 46.1% were females. The age of the participants was between 18-35 years, with the mean of 23.1(SD 3.0). Our study therefore shows approximately 76.3% of University students involved to be poorly physical active in regard of the recommendation for their age. On barriers of physical activity to University students our study came up with several factors including curriculum structure, 47.9% of participants' curriculum did not put an emphasis on their participation in physical activity. Knowledge on the advantages of being physically active to one's health was so clear to about 82.9% of our participants and supportive physical environment was an influencing factor to 75.3% of students in our study, the presence of sport grounds/pitches was encouraging for these individuals to participate in physical activity.

**Conclusion:** From our study knowledge on whether being physically active is a must and important or not, is not a problem as most of our study participants had this knowledge. Despite having this knowledge most University students are not physically active sufficiently enough, instead they engage in physical activity which are integrated in their daily activities such as walking to the college and most of their time in a day is spent while sitting and on electronic devices.

**Recommendations:**

- i. The Universities should find a way to emphasis and include physical activity programs in the University curriculum as it has been done in development studies.
- ii. The Universities should be creative to find a way of conducting the lectures in different modes other than sitting alone.

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- iii. The Universities should make efforts to have enough and good play grounds and other supportive infrastructures for physical activity such as special pavements for walking, jogging and cycling.
- iv. The sports and games stakeholders should create sports events regularly which will motivate the University students to engage themselves and presence of awards and trophies for the winners.
- v. The University students should integrate the knowledge they have into their daily lives and spend less time in sedentary lifestyle such as use of electronic devices.

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**The Effectiveness of Peer Support Learning Strategy on Improving Self-Care Competence and Health Outcomes among Adult Diabetic Patients in Referral Hospitals of Dodoma Region: A Quasi-Experimental Study**

**Authors:** Grace Joseph, Stephen Kibusi

**Affiliation:** The University of Dodoma

**Background:** Patients with diabetes are in risk of developing different life-threatening health complications, this lead to increased medical expenses, reduced quality of life and increased mortality rate. Different innovative teaching methods are needed in order to control and to prevent the burden of diabetes.

**Aim:** This study was aimed to assess the effectiveness of Peer Support Learning Strategy on improving self-care competence and health outcomes among adult diabetic patients in referral hospitals of Dodoma region.

**Methodology:** Controlled quasi-experimental pre-post design was used. A list of 10 patients with good glucose level control were obtained from diabetic clinic in charge and attended 3-days training sessions on how to facilitate and structure the different sessions. A total of 72 participants in the intervention was matched with 72 participants of the control through randomly selection. Interviewer administered questionnaires was used in addition glucose level and blood pressure also was checked at pretest and posttest. Each study participant attended a total of two session, each secession took one hour and in between health education massage on diabetes was sent by expert patients before second session .Intervention was implemented from May 2020 to August 2020.

**Results:** The mean age for study participants was 54.86 in control group and 53.33 in the intervention group. The independent t-test showed significant difference between groups for self-care competence; the mean scores in the post test was (M=63.1846) for intervention group and (M=54.7258) for control group, p-value <0.005. The results for attitude at posttest was (M=30.3077) for intervention group and (M=25.4355) in the control group, p-value <0.005. Self-care practice at posttest was (M=8.6667) for intervention group and (M=6.9844) for control group, p-value <0.005. For adherence at posttest (M=3.7077) for intervention and (M=2.2581) for control group, p-value <0.005. The Difference in Difference analysis showed that, the knowledge in intervention group was increased by 10.945, p value <0.01. Attitude was increased by 5.324, p-value <0.01 in the intervention group, self-care

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practice was increased by 2.155, p-value <0.001 in the intervention and adherence was increased by 1.403 in the intervention group, p-value <0.01 after controlling other factors. For health outcomes the independent t-test showed no significant difference between groups, mean score for Fasting Blood Glucose at post was (M=8.788) for intervention and (M=8.532) for control, p-value >0.005. Random Blood Glucose at posttest was (M=15.914) for intervention and (M=15.106) for control group p-value >0.005, there was no significant difference between two groups, p-value >0.05. For Systolic Blood Pressure at posttest (M=144.09) for intervention and (M=137.96) for control. At posttest Diastolic Blood Pressure was (M=81.18) for intervention and (M=79.1) for control group, p-value >0.005.

**Conclusion:** Peer support learning strategy it can be considered as an active additional method of delivering Diabetes Self care Management Education to diabetes patients in resource constrain community like Tanzania. Engaging patients to become peer supporters may be a useful strategy for long-term diabetes management

**Recommendations**

- i. Since the peer support learning strategy is the additional method to the usual methods, all diabetic clinics in referral hospitals of Dodoma region should restructure the routine DSME during clinics as it is not well structured.
- ii. Meanwhile peer support learning strategy have shown improvement on knowledge, attitude and practice , policy maker and other stake holders should integrate the strategy in the diabetic clinics where provision of comprehensives DSME during attendance seems to be difficult due to shortage of health care providers with the increase of the number of patients with diabetes.
- iii. Ministry of Health, Community Development, Gender, Elderly and Children to support PSLS to in referral hospitals of Dodoma region.

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**Uptake of cost-free Hepatitis B vaccination among healthcare workers in Northern Tanzania**

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**Background:** World Health Organization (WHO) and other global agencies recommend all health care workers (HCWs) to get vaccinated against the hepatitis B virus before enrolment to clinical work. There are limited data in low-income countries on hepatitis B vaccination coverage among HCWs which set back the WHO Hepatitis B Elimination Strategy 2016-2021. The aim of this study was to determine the prevalence of hepatitis B vaccination uptake

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and associated factors among HCWs from a tertiary and teaching hospital in northern Tanzania.

**Aim:** The aim of this study was to determine the prevalence of hepatitis B vaccination uptake and associated factors among HCWs from a tertiary and teaching hospital in northern Tanzania.

**Methodology:** A cross-sectional study was conducted among consenting HCWs at Kilimanjaro Christian Medical Centre (KCMC) a referral and teaching hospital from August 2016 to June 2017. After one week of sensitization through presentations, consenting healthcare workers (HCWs) were enrolled to take part in the study. Questionnaire-based interviews were used to obtain information about HCWs' demographic characteristics, occupation risks, and other invasive procedures such as intravenous, and intramuscular injections and knowledge of HBV infection. Serological markers of HBV were done using Laborex HBsAg rapid test. Multivariable logistic regression was used to determine factors associated with HBV infection.

**Results:** About two third 295(67.4%) of 438 participants had received HBV vaccination. Among those who ever received HBV vaccination (n=295), 205 (70.5%) received 3 shots, 57 (19.5%) received 2 shots and 33 (10%) received 1 shot. HCWs working in clinical areas had 79% higher odds of vaccine uptake compared to those who were not (OR=1.79, 95%CI 1.11, 2.89). Ever having intravenous and intramuscular injections significantly increased the odds of vaccination uptake compared to those who never had (OR=2.21, 95%CI 1.33, 3.66) and (OR=2.42, 95%CI 1.36, 4.28) respectively. Also, HCWs with a fair and good knowledge on HBV infection had over three times higher odds of vaccine uptake compared to those with poor knowledge (OR=3.08, 95%CI 1.90, 5.01) and (OR=3.07, 95%CI 1.75, 5.40) respectively. After adjusting for area of specialty, working in clinical areas, ever had intravenous injection, ever having intramuscular injection and knowledge on HBV infection; factors that remained to be significantly associated with HBV vaccine uptake were area of specialty and knowledge on HBV infection

**Conclusion:** The current vaccination coverage among HCWs at KCMC, referral and teaching hospital in North-eastern Tanzania was only 67.4% despite of it been given free of charge. Factors that were associated with HBV vaccine uptake include area of specialty and knowledge of participants on HBV infection and vaccination. This study included only one referral and teaching hospital in Tanzania, there is need to expand this study to involve other health facilities in the country in order to have the big picture. We encourage continuous medical education among HCWs about important of hepatitis B vaccination

**Recommendations:** We recommend hepatitis B vaccination as a pre-employment requirement for HCWs as well as doing antibody titer post-vaccination for none-responders.

**Theme: Care And Treatment**

**The Jakaya Kikwete Cardiac Institute: Five years' experience**

**Authors:** Mohammed Janabi

**Affiliation:** Jakaya Kikwete Cardiac Institute

**Background:** Cardio-vascular diseases (CVDs) are growing up in developing countries (DC) they are the leading cause of deaths in the world in low and middle income countries (LMIC) 80% of deaths are related to CVD often in young population it has been estimated that 8 to 9 million deaths are attributable to CVD in developing world this heavy burden of CVD death in DC is affecting negatively LMIC socio-economic development. It has been also shown a recent shift in the disease pattern with an epidemiologic transition in DC where infection and malnutrition are declining while chronic diseases including CVD are increasing.

Despite rising rate of CVD and Atherosclerosis in DC, rheumatic heart diseases (RHD) still remain one of the most common CVD in Sub-Saharan Africa, and in developing world it has been established that in the next 20 to 40 years DC will continue to face a double CVD burden: that of RHD and of Atherosclerosis with ischemic or hypertensive heart diseases. Therefore, in DC, medical and surgical CVD treatment as open heart surgical procedures will still be needed in our African countries. Open heart surgery (OHS) has been introduced in Africa in a recent time and has a long way to go in our continent.

**Objective:** Evaluating five years since inauguration of JKCI.

**Lessons learned:** In the past 20 years, preparatory work for establishment of open-heart facility in Tanzania included learning from experiences of other countries through among others, study tours. The various task forces that visited other countries and learnt from various sources reported that developing a sustainable cardiac facility is a big challenge, and many least developed countries that attempted to establish such facilities have not managed to sustain them. The main reason is the expensive nature of heart surgery/intervention services, which make it very hard for governments in poor countries like Tanzania, where the state cannot meet the cost of medical care even for ailments that are relatively inexpensive to treat.

**Conclusion:** Here we share the success story of JKCI during this initial five year which demonstrates the great potential that exists to expand cardiac surgery in Africa and highlights some of the major resource bottlenecks that may hinder the scale-up of surgical programs and way to tackle some of them and achieve success.

**Recommendations:** Continue partnership of public/private

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**Electrolytes supplementation reduces the risk of nephrotoxicity in patients with solid tumors under chemotherapy with cisplatin**

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**Affiliation:** Muhimbili University of Health and Allied Sciences

**Background:** Cisplatin is an important drug in the treatment of various Cancers. However, this drug causes nephrotoxicity that is linked to electrolyte derangement in affected patients.

**Objectives/Aims:** To evaluate the effect of electrolyte supplementation in reducing kidney injury in patients receiving cisplatin-based regimen

**Methodology/ Project plan:** This was non-randomized interventional study conducted at Ocean Road Cancer Institute(ORCI)among patients with confirmed solid tumors. Patients who received cisplatin-based chemotherapy at a dose of  $\geq 50$ mg with intravenous normal saline supplemented with Magnesium, Calcium and Potassium(triple electrolyte supplementation)were compared with those who received cisplatin-based chemotherapy with normal saline alone. The patients were followed up for 4weeks and serum creatinine was measured at every visit. Nephrotoxicity was defined as serum creatinine elevation  $> 1.5$  times that at baseline

**Results/ Progress:** A total of 99 patients were recruited, whereby 49 patients (49.5%) received electrolyte supplementation (treatment group) and 50 patients (51.5%) did not receive electrolyte supplementation (control group). The incidence risk of nephrotoxicity was 20.41% (n=10) in the treatment group and 54% (n=27) in the control group. Patients in the control group were 2.6 times more likely to experience nephrotoxicity as compared to treatment group [Relative Risks (RR); 2.6, 95%CI; 1.5-4.9,  $P < 0.0001$ ]. The most common malignancy was cervical cancer, n = 43 (87.8%) in treatment group and n= 45 (90.0%) in the control group ( $P = 0.590$ ). The Kaplan-Meier analysis and the log-rank test revealed that electrolytes supplementation was associated with extended survival with less nephrotoxicity incidences [ $P = 0.0004$ ; Hazard ratio (HR) 0.3149; 95% CI 0.165 to 0.6011].

**Conclusion/ Lessons learned:** Electrolytes supplementation decreases the risk of nephrotoxicity after chemotherapy with cisplatin.

**Recommendations:** A randomized controlled trial with a larger sample size is recommended to evaluate the robustness of these findings

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### Rehabilitation Care for Elderly People: Better Practices from Non-Government Organizations

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iiTanzania Cooperative Development Commission

**Background:** Rehabilitation care aims at improving the quality of life for people living with life-limiting illness by enabling them to be as active and productive as possible with minimum dependence on others

**Aim:** The study aimed at examining the types of services related to palliative rehabilitation care provided to older people and perceptions of older people on services provided by NGO

**Methodology:** The sampling frame of the study included technical staff of the NGOs and elderly people served by the NGOs, taking AMRCO NGO as the case study. AMRCO

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provide healthcare services by using volunteer health professionals who work in different hospitals in Kilimanjaro and other regions. The study used purposive sampling to select technical staff working at the NGO and used simple random sampling in selecting elderly people served by the NGO. The study involved 92 respondents for the study, whereby 87 were elderly people and 5 were staff working at the NGO. Data for the study were analyzed by Statistical Package for Social Science (SPSS), whereby, descriptive statistics were presented using frequency and percentage.

**Results:** The study found services provided to elderly people included health education and examination for non-communicable diseases such as blood pressure, diabetes, oral and dental diseases. Also, special attention is given to each elderly person with some complicated health problems i.e high blood pressure, high blood glucose, eye problems and joint pain who are referred to nearby health center like KCMC Hospital, Kibosho Hospital and Mawenzi Regional Referral Hospital for emergence and further management. The study findings showed that services provided by NGO were perceived important as they improved the elderly people's health conditions. Elderly people were very satisfied with the services including medical attention, referrals and follow up that they needed and the quality of care that was provided without any cost.

**Conclusion:** Rehabilitation care for is important as help them to get back on track, both physically and emotionally

**Recommendations:** Therefore, the study recommends different stakeholders to support organizations involving in rehabilitations services

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**Presentation and difficulties associated with Parkinson disease in Tanzanian Parkinson disease patients.**

**AUTHORS:** Gatambwa Mukandala, Reuben Kato Mutagaywa, Tumaini Basil, Patience Njenje, Brighton Mushengezi, Rehema Nyagabona, Joseph Kahamba

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**Background:** Parkinson disease (PD) imposes a great physical, psychological, and socioeconomic difficulties to the affected individuals. Little is known about PD presentation and its associated difficulties in Tanzania.

**Aim:** To determine the presentation and difficulties associated with PD in a Tanzanian PD population.

**Methodology:** From January 2019 to September 2020 we conducted a cross sectional study among Eighty PD patients whom the diagnosis was that of Idiopathic PD made somewhere else by a neurologist/physician. Recruitment was via a neurology outpatient clinic of selected hospitals in Dar es Sa-laam. We modified the Unified Parkinson's Disease Rating

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and the Hoehn and Yahr scales to answer our research questions. Patient's demographics were recorded. Continuous and discrete data were presented as mean  $\pm$  SD and as counts respectively. Consent from participants and ethical approval from MUHAS (DA.282/298/01.C) were obtained. UDSM sponsored the study.

**Results:** Of the 80 Tanzanian PD patients, 56(70%) were male. Majority, 75(93.75%) were 51<sup>3</sup> years old. Five were aged 43 – 50 years. The mean duration of PD was  $5.30 \pm 3.19$  years with a mean duration of  $2.25 \pm 1.54$  years from first symptom's presentation to diagnosis. A third of them attained a primary, secondary or college education, 23(28.75%) retired and 68(85%) were married. Sixty-nine (82.25%) patients reported that the cause of PD is not known and 71(88.75%) reported that treatment for PD is available. Only 21(26.25%) were attending physiotherapy and most of them had comorbidities such as hypertension 37(46.25%) and diabetes 13(16.25%). Forty-six (57.5%) patients had medical insurance. Forty-one (53.2%) patients reported a mild-moderate physical difficulty with the limitation of physical activity in 78(97.3%), speech disorders in 32(40%), and asso-ciated musculoskeletal disorders in 35(43.75%) individuals. Fifty (72%) patients reported a mild-moderate psychological difficulty with the following components: 32(40%) memory impairment, 53(66.25%) stress/depression due to limitation of physical activity and 23(28.75%) feeling helpless and anxious/fear for the future. Fifty-two (69.5%) reported a mild-moderate socioeconomic diffi-culty with most of them, 38(47.5%) reporting failure of maintaining working life with at least a third reporting economic burden for treatment, difficulty of outpatient treatment, lack of social sup-port, and people's prejudice towards the disease.

**Conclusion:** We found a delay in making a diagnosis of PD. More than half of patients presented with mild to moderate (physical, psychological, and socioeconomic) difficulties associated with PD.

**Recommendations:** There is a need for early recognition and diagnosis of PD and its associated complications in Tanzania.

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### Availability and accessibility of morphine in rural settings for NCDs patients; Ndanda Village Masasi Testimony

**Authors:** Elvis Joseph Miti

**Affiliation organization:** UZIMA Project Ndanda C/o Ndanda Parish P.o Box 25 Mtwara

**Background:** We started Community Palliative Care (CoPC) services in Ndanda Village in 2015 as one of the services provided by UZIMA Project Ndanda (UZIMA). It was a call by the local people for community health support related to NCDs chronic illnesses, especially prostate and breast cancers. There was no systematic provision of Morphine to NCDs cancer patients by 2015. It was through the initiative of UZIMA that CoPC in collaboration with Benedict's Ndanda Referral Hospital (SBH) that we started advocating for Morphine for NCDs patients in Ndanda

**Objective:** To advocate for the availability and accessibility of Morphine at SBH in Ndanda

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**Project plan :** We aimed to conduct 4-day advocacy training for: 1) Professional Health Care (PHC) of SBH on Morphine and NCDs. 2) Community Palliative Care volunteers (CPCV) to make preliminary physical pain assessment. 3) Practicum of identifying the level of the physical pain of chronic NCDs patients. 4) Linking the CPCV with SBH to fast-track the provision of morphine to Cancer Patients. 5) Funding the procurement of Morphine from ORCI

**Progress :** 20 PHC trained in NCDs and necessity of morphine in physical pain management by June 2020. 30 CPCV trained in administering pain assessment tools in Palliative Care by June 2020. SBH Palliative Care team recognize the role of CPCV in the morphine availability and accessibility cycle by June 2020. 20 patients started using Morphine in Ndanda village by June 2020. UZIMA and SBH combined the funding to purchase morphine from ORCI.

**Lessons learned:** Palliative Care is a right for everyone; it includes NCDs patients, especially in rural settings. Cancer physical pain management through the availability and accessibility of morphine is a requirement in a rural area too. Different cadres are ready to learn how to distribute morphine if it is available and accessible in rural settings.

**Recommendations**

Despite the existing strict regulations on the availability and accessibility of morphine in Tanzania, rural settings should be one of the priority areas for morphine for improved NCDs physical pain management

We should do more advocacy trainings for morphine in the rural setting too.

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**Adherence and Safety Profile of Hydroxyurea In Children with Sickle Cell Disease at Muhimbili National Hospital**

**Authors:** Joaness Ntimba, Dr Ritah Mutagonda

**Affiliation:** Muhimbili University of Health and Allied Sciences, School of Pharmacy

**Background:** Hydroxyurea lowers the numbers of acute chest syndrome events, the number of pain crises, the need for blood transfusions and number of hospitalizations among patients with sickle cell anaemia. There is limited information regarding HU adherence, effectiveness and safety in African population especially in Tanzania. Therefore, this study assessed the adherence and syndrome profile of HU among SCD children at Muhimbili National Hospital (MNH).

**Aim:** I. To determine the level of adherence, serious adverse events and factors affecting adherence among children with sickle cell anaemia using hydroxyurea at Muhimbili National Hospital.

**Methodology:** A cross sectional hospital-based study was conducted at sickle cell clinic at MNH. The study involved 80 SCD children, aged 1 to 17 years who were using HU in the months of March, June, July and August. Data was collected using structured questionnaires incorporating the ©Modified Morisky Adherence Scale 8-items (©MMAS-8) for assessment of adherence to HU. Adverse drug events (ADEs) and laboratory parameters were recorded for evaluation of safety.

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**Results:** Adherence was low in 18.8%, moderate in 41.3% and high in 40% of participants. The most reported factors affecting adherence to HU were distance from the health facility (18.8%), followed by cost of the drug (11.3%) and availability of the drug (8.8%). Regarding the safety of the drug, HU lowered white blood cells (WBC) count (from median value of 12.4 to 9.4,  $p=0.000$ ) and the ANC count (from the median value of 5.29 to 3.8,  $p=0.000$ ). Self-reported ADEs included chest pain, pain in the lower limbs and body fatigue, each reported by one participant.

**Conclusion:** This study observed suboptimal adherence to HU among SCD children which was mainly contributed by the long distance to the health care facility and the cost of the drug. Despite the cautioning changes in hematological parameters, HU is generally well tolerated.

**Recommendations:** Hydroxyurea should be made free and the number of facilities offering sickle cell treatment should be increased.

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**Oral Presentations – Day Two****Theme: Ncd Basic Science Research****Bone Healing and Feasibility of Orthodontic Tooth Movement Through Regenerated Alveolar Bone.**

**Authors:** Ferdinand Mabula Machibya, Yiyuan Zhuang, Chen Jiang

**Affiliation:** Muhimbili University of Health and Allied Sciences (MUHAS) and Fujian Medical University (FMU)

**Background:** Alveolar ridge augmentation is commonly done to manage severe periodontal disease, traumatic dental injury and other dental conditions affecting alveolar bone. However, little is known on the feasibility of orthodontic tooth movement and reaction of augmented tissue to orthodontic force.

**Aim:** To evaluate the bone healing, efficiency and effectiveness of orthodontic tooth movement into alveolar bone defects treated with Guided Bone Regeneration (GBR) utilizing xenografts and alloplast Bone Regeneration Material (BRM)

**Methodology:** Twenty-four standard alveolar bone defects in six male beagle dogs were treated by GBR using either Bio Oss or Beta-tricalcium phosphate ( $\beta$ -TCP) (experimental) whereas the control defects were left empty. The defects were further grouped into either early (E) or late (L) groups, depending on OTM timing after GBR (i.e. one month or two months respectively). Biomarkers (osteoprotegerin (OPG), vascular epithelial growth factor (VEGF) and matrix metalloproteinases-2 (MMP-2)) expression were assessed and the rates of orthodontic tooth movement was measured intraorally, while the CT scan images were used to assess the bone density, alveolar bone height, the second premolar displacement and tipping tendency

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**Results:** The bone healing clinical features assessment showed no significant difference between BRMs. However, the OPG concentration registered on 3rd day was significantly higher for  $\beta$ -TCP than Control group. The VEGF concentration on 7th day was significantly lower for Bio Oss than Control and  $\beta$ -TCP. The experiment group had significantly higher MMP-2 concentration than Control on the 10th day. There was significant increase on bone density for the experiment groups compared to control at one month with higher bone height at one and two months post-operatively ( $P < 0.05$ ).

Generally, Bio Oss-E and Bio Oss-L recorded the lowest amount of tooth movement than other models of GBRs assessed. Before OTM the control group registered significantly low bone height compared to Bio Oss and  $\beta$ -TCP groups ( $P < 0.01$ ). The control group was inferior on bone and bone height compared to Bio Oss and  $\beta$ -TCP.

After OTM the second premolar displacement for Bio Oss was statistically significantly lower than control group and the OPG concentration at baseline was significantly higher in the control than the Bio Oss group.

**Conclusion:** The type of BRM had fundamental effects on the pattern of healing makers (OPG, VEGF and MMP-2) concentration in Gingival Crevicular Fluid (GCF) at some-point during healing time. Furthermore, the experimental groups had enhanced bone density one-month post-operative with more bone height gain at one and two month post-operative. The Bio Oss group had favourable radiological features (higher alveolar bone level and bone density with less premolar tipping) but showed slower OTM than control group. The late OTM sub-group had favourable radiological features and showed faster tooth movement than Early OTM in Beta-TCP group. The type of regeneration materials used determined the extent of tooth movement in regenerated alveolar bone defects

**Recommendations:** Proper selection of xenografts or alloplast Bone Regeneration Material is recommended in management of alveolar bone defects. xenografts and alloplast Bone Regeneration Material (BRM) and the country should consider enhance training and clinical use of bone regeneration in dentistry. Further studies in bone regeneration and other aspects of regeneration medicine is recommended

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**Comparative Efficacy of Routine Histology, IHC, and PCR Diagnostics for KS in Africa**

**Authors:** John Ngowi, Angela Mlole, Asafu Munema, Godwin Kessy, Brenda Bashekera, Andrea Towleron, Julius Mwaiselage, Fred Okuku, Warren Phipps, John T. West.

**Institution:** Ocean Road Cancer Institute, Uganda Cancer Institute, Fred Hutchinson Cancer Research Center, University of Nebraska

**Background:** Kaposi's sarcoma (KS) is among the most common HIV-associated malignancies in sub-Saharan Africa (SSA). KS diagnosis is challenging in resource limited settings because of a large number of potential confounding diagnoses, and since H&E is not a definitive technique, potential KS has been fraught with both false-positive and false negative diagnosis of KS. The current gold standard for KS diagnosis is immunohistochemistry (IHC) staining for the latency associated nuclear antigen of human

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herpesvirus-8 (HHV-8). Molecular diagnostic methods offer an alternative to IHC, and both conventional and quantitative real-time polymerase chain reaction (PCR) platforms are now widely available in most of Sub Sahara Africa

**Aim:** To determine whether adding routine IHC to detect KSHV latency associated nuclear Antigen (LANA-1) to routine H&E improves the accuracy of KS diagnosis and to evaluate the potential to use of HHV-8 specific PCR to improve the diagnosis

**Methodology:** We recruited suspected KS patients aged 18 years and older, presenting for the first time to Uganda Cancer Institute or Ocean Road Cancer Institute. Based on an extensive clinical examination following consent, study clinicians obtained punch biopsies from suspected KS lesions first biopsy using a 1.0 mm skin biopsy for PCR diagnostics followed by a 4.0 mm biopsy of the same suspected tumor tissue for histology (H&E) and immunohistochemistry.

**Results:** We have already recruited 18 clinically diagnosed KS patients referred to ORCI from other centers for histological biopsy. From the same lesion site we took, a 4mm punch for IHC and H&E staining and a 1mm punch for PCR diagnosis

Positive KS diagnosis H&E=16 Cases, PCR=11 Cases, IHC= 10 Cases Concordance. All tests=11 Cases (61%) and PCR & IHC=15 Cases (83%)

**Conclusion:** It is feasible in our setting to establish methodologies for IHC and PCR-based detection of KSHV. IHC and PCR appear to assist resolution of uncertain KS diagnoses based on H&E alone.

**Recommendations:** Sample collection, histopathology and molecular diagnostic studies at ORCI and UCI is still ongoing. Swap samples and images between institutions to validate findings

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**Hypoxia-induced aquaporin-3 changes hepatocellular carcinoma cell sensitivity to sorafenib by activating the PI3K/Akt signaling pathway.**

**Authors:** Kija Malale, Jili Fu, Liewang Qiu, Ke Zhan, Xiuni Gan, Zhechuan Mei

**Affiliation:** Faculty of Nursing, Catholic University of Health and Allied Sciences, Tanzania; Department of Gastroenterology, The Second Affiliated Hospital of Chongqing Medical University, Chongqing, People's Republic of China; Department of Endocrinology and Met

**Background:** Hypoxia-induced changes are primarily activated in patients with hepatocellular carcinoma (HCC) and long-term sorafenib exposure, thereby reducing the sensitivity to the drug. Aquaporin-3 (AQP3), a member of the aquaporin family, is a hypoxia-induced substance that affects the chemosensitivity of non-hepatocellular tumors. However, its expression and role in the sensitivity of hypoxic HCC cells to sorafenib-induced apoptosis remain unclear.

**Aim:** The aim of this study was to detect changes in AQP3 expression in hypoxic HCC cells and to determine whether these changes alter the sensitivity of these cells to sorafenib.

**Methodology:** Huh7 and HepG2 hypoxic cell models were established, and AQP3 expression was detected using quantitative real-time polymerase chain reaction (qPCR) and

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western blotting. Furthermore, the role of AQP3 in cell sensitivity to sorafenib was evaluated via flow cytometry, western blotting, and a CCK-8 assay.

**Results:** The results of qPCR and western blotting showed that AQP3 was overexpressed in the Huh7 and HepG2 hypoxic cell models. Furthermore, AQP3 protein levels were positively correlated with hypoxia-inducible factor-1 $\alpha$  (HIF-1 $\alpha$ ) levels. Compared with cells transfected with lentivirus-GFP (Lv-GFP), hypoxic cells transfected with lentivirus-AQP3 (Lv-AQP3) were less sensitive to sorafenib-induced apoptosis. However, the sensitivity to the drug increased in cells transfected with lentivirus-AQP3RNAi (Lv-AQP3RNAi). Akt and Erk phosphorylation was enhanced in Lv-AQP3-transfected cells. Compared with UO126 (a Mek1/2 inhibitor), LY294002 (a PI3K inhibitor) attenuated the AQP3-induced insensitivity to sorafenib observed in hypoxic cells transfected with Lv-AQP3. Combined with LY294002-treated cells, hypoxic cells transfected with Lv-AQP3RNAi were more sensitive to sorafenib.

**Conclusion:** Changes in AQP3 expression modulate hypoxic HCC cell sensitivity to sorafenib; the hypoxia-induced AQP3 expression reduces HCC cell sensitivity to sorafenib via PI3K/Akt signaling pathway activation. Therefore, AQP3 is a potential therapeutic target for improving hypoxic HCC cell sensitivity to sorafenib.

**Recommendations:** Further in vivo studies are needed to confirm our findings.

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**Determination of Butyrate Ameliorative Effects on the Severity of Dexamethasone-Induced Diabetic Changes in Rats.**

**Authors:** Rehema Shungu, Joshua Malago

**Affiliation:** Sokoine University of Agriculture

**Background:**

Diabetes mellitus is a condition that is characterized by abnormal high amounts of glucose levels in the blood. With the incidence that increases annually by 2%-3%. Recent studies have shown a correlation between the microbial compositions in the human gut with occurring metabolic disorders such as diabetes as human gastrointestinal tract represents a large contact area between the body and the external environment. A change in the microbiota composition may predispose to diabetes mellitus as there is an alteration of the gut metabolic activity including microbiota fermentation products such as butyrate. This results to an imbalance referred to as intestinal dysbiosis.

**Aim:** The aim of this study was to determine the beneficial effect and protective potency of butyrate on diabetes and study the diabetic model using rat models as human reference and sodium butyrate as source of the butyrate.

**Methodology:** Using experimental study design, a complete randomized method was employed, a total of 18 rats aged 6-8months and weighing 90-150g were used. They were acclimatized for 1 week in their respective treatment groups based on the body weight before the beginning of the experiment and fed standard laboratory diet. Diabetes mellitus was induced by injecting rats with 4 mg/kg dexamethasone intraperitoneally for four consecutive

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days following or without prior treatment with 100 mg/kg butyrate (intraperitoneally) every other day for seven days in respect to treatments. On day 14, blood glucose levels were determined by glucometer plus device where blood was drawn from the tail end vein.

**Results:** The group that received butyrate only had the highest mean blood glucose level of 5.45mg/dl followed by dexamethasone only treated group with 5.1mg/dl. An increase in the average body weight was seen in all groups. The rats were then humanely sacrificed by chloroform, autopsied. The liver and pancreas of each group were taken and fixed in 10% neutral buffered formalin for 24 hours, then sectioned at 4 $\mu$ m, fixed and stained using H&E stain for histological evaluation of tissue damage under a light microscope under supervision of an experienced pathologist. Hepatic micro and macro vesicular steatosis, pyknosis, acidophilic bodies, vacuolation and sinusoidal ectasia were observed. In the pancreas the numbers of Islets of Langerhans were increased and hyperplastic observed

**Conclusion:** Reduction of the severity of these changes by butyrate was observed. It is concluded that butyrate suppresses the deleterious effects of dexamethasone-induced diabetic changes.

**Recommendations:** This observation alludes the fact that butyrate supplements may have protective ramifications against diabetes mellitus.

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**Theme: Ncd Risk Factors****Esophageal cancer risk factors: comparative study of patients residing in lowlands versus highland**

**Authors:** Dr. Jackson Rehman Matondo, Dr. Larry O. Akoko

**Affiliation:** Muhimbili University of Health and Allied Sciences Department of Surgery

**Background:** Esophageal cancer is the 8th most common cancer and the 6th cause of cancer deaths in the world. There is a discrepancy in the distribution of the disease in highlands and lowlands. In Tanzania, there is a trend that shows the prevalence of the disease is increasing in lowlands. This change seems to be due to the bias of some risk factors that have become more common in lowlands. However, there is no current information in Tanzania on the distribution of risk factors for esophageal cancer between lowlands and highlands.

**Aim:** To compare the occurrence of risk factors between Esophageal Cancer patients coming from lowlands with those coming from highlands

**Methodology:** Comparative hospital-based prospective cross-sectional study was conducted among patients at Muhimbili National Hospital and Ocean Road Cancer Institute. The subjects were categorized into groups of those coming from highland areas and those coming from lowland areas. Information on demography and risk factors for esophageal cancer was collected. The data was then analyzed to calculate the Odds ratios of the presence of individual risk factors in low land areas compared to highland areas.

**Results:** A total of 310 participants were enrolled in the study. There were 136 participants from the lowlands and 174 from highlands. The mean age of participants was 57.4  $\pm$  14.5 years. Squamous cell carcinoma was the most common histological type in both lowlands

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and highlands. Patients from highlands had 1.9 odds of drinking alcohol compared to patients from lowlands (p-value 0.006, CI 1.2 – 3.1). The commonest risk factors in lowlands were drinking hot beverages at 97.8% while the commonest risk factor in highlands was the consumption of red meat (97.7%).

**Conclusion:** In Tanzania, esophageal cancer is still a predominantly a highlands disease however the incidence in lowlands is on the rise. Most of the risk factors profiles do not differ significantly between patients from highlands and lowlands except alcohol intake and red meat consumption which are more common in highlands and taking of hot drinks which is most common in lowlands.

**Recommendations:**

- i. More researches should be done on the causal relationship between intake of hot drinks and the development of esophageal cancer in terms of the rate of use of hot drinks and the ideal temperature for the development of esophageal cancer
- ii. A prospective cohort study design assessing the relative risk for the development of esophageal cancer in lowland and highland regions can be done to fully understand these risk factors differences in these two regions.

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**Prevalence and factors associated with mortality in chest injuries among trauma patients admitted at Muhimbili National Hospital in Dar es Salaam, Tanzania.**

**Authors:** Janeth S. Masuma, MD; Respicious Boniface, MD, MMed Anaesthesiology, MSc. Edwin Lugazia, MD, MMed Anaesthesiology, MSc, MBA.

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**Background:** Chest injuries prevail about 1/5<sup>th</sup> of all trauma patients. Mortality rate and its predictors differ in different settings. There is a great role of time of hospital presentation and pain control in the outcome. Identifying predictors of mortality would enhance early preventive measures and intervention so as to reduce mortality.

**Objective:** This study aimed at determining the prevalence, and factors associated with mortality of chest injuries among trauma patients admitted at Muhimbili National Hospital.

**Methodology:** Prospective analysis of 282 trauma patients who were admitted at Muhimbili hospital from September 2019-february 2020. Systematic random technique was used to enrol trauma patients in this study. Data were collected using a pretested structured questionnaire and a check list, and were analysed using SPSS version 23.

**Results:** A total of 282 patients were enrolled in the study. Their median age was 30 years. About 80.5% were males. The prevalence of chest injury was 18.1%. Majority of the patients had lung contusion (33.3%), hemopneumothorax (15.7%)and rib fractures (15.7%). The overall mortality was 21.6%. Injury severity score 25 and above, duration of injury to presentation >24 hours, invasive ventilation and absence of associated injuries had

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statistically significant association with mortality with p values, 0.045, 0.00, 0.036 and 0.029. Absence of associated injuries being associated with mortality was an unexpected finding in this study.

**Conclusion:** Chest injuries have both high magnitude and mortality. Predictors of mortality were Injury severity score of 25 and above, duration of injury to presentation >24 hours, invasive ventilation and absence of associated injuries. Proper interventions should be implemented to counteract for these predictors.

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**Assessment of knowledge, attitude and practices on compliance with road safety measures among commercial motorcyclists in Dodoma.**

**Authors:** Jackson s Nzuchi, Dr. Selestine Ngoma

**Affiliation:** The University of Dodoma

**Background:** Traffic crashes are major causes of global morbidity and mortality mostly affecting low- and middle-income countries whereby deaths and injuries of road traffic accidents occur in developing countries. Commercial motorcyclists take the upfront vulnerable for they are wide-open to traffic risks with limited use of safety equipment. This study made an assessment of the knowledge, attitude, and practices on the compliance with road safety measures among commercial motorcyclists in Dodoma region of Tanzania.

**Aims:** The aims of this study were; firstly, to assess the level compliance with road safety measures among commercial motorcyclists in Dodoma region of Tanzania; secondly, to assess knowledge on compliance with road safety measures among commercial motorcyclist

**Methodology:** An analytical cross-sectional study was conducted with commercial motorcyclists in Dodoma region between June and July 2020. Lottery method were used to select 6 out of 41 wards of Dodoma city council were selected and purposive sampling was used to select 3 wards close to the highway out of 36 in Chamwino district. A self-administered questionnaire was used to generate data from respondents who were sampled by convenience technique. Data were analyzed using Statistical Package of Social Sciences (SPSS) version 20.

**Results:** The results revealed that out of the 378 commercial motorcyclists with mean age of 25.14 years and standard deviation (SD) of 4.13, about 60.8% had poor compliance with road safety measures, 62.2% had adequate knowledge of road safety measures, 59.2% had a positive attitude on road safety measures, and 55% had poor practices on compliance to road safety measures. Further, 39.9% of commercial motorcyclists did not attend to driving school, 53.2% did not have a driving license, and 59.1% do not put on a helmet when cycling. Poor practice of commercial motorcyclists was significantly ( $p < 0.05$ ) associated on poor compliance with road safety measures (OR = 0.248; 95% CI: 0.158 – 0.389), in a sense that commercial motorcyclists with poor practice are almost 0.25 less likely to comply with road safety measures compare to commercial motorcyclists with good practices on road safety measures. Residence was significantly ( $p < 0.05$ ) associated with knowledge on compliance with road safety measures (OR = 0.373; 95% CI: 0.169 – 0.819). Education was

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significantly ( $p < 0.05$ ) associated with knowledge on compliance with road safety measures (OR = 0.501: 95% CI: 0.260 – 0.967). Good compliance was significantly ( $p < 0.05$ ) associated with positive attitude on compliance with road safety measure (OR = 1.748: 95% CI: 1.135 – 2.692).

**Conclusion:** The practices on compliance with road safety measures among commercial motorcyclists in Dodoma region are poor. Thus, there is a need for comprehensive intervention strategies to encourage good practices on compliance with road safety measures and reduce road traffic accidents and the severity of road traffic injuries among commercial motorcyclists.

**Recommendations:** To combat poor compliance and poor practices among commercial motorcyclists a highly political will is needed, formal driving training must be highly pressed to those people who want to join the field of driving, education of road safety must continue to be provided through mass media like televisions and radios also community involvement on road safety agendas is very important as they involve in using motorcycles as means of transport for fast trip around towns and rural settings, this will help to reduce the occurrence of road traffic accidents hence reducing the number of deaths and injuries resulted from road traffic accidents involving commercial motorcyclists.

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**Maternal exposure to Ambient Air Pollution and Risk of Neural Tube Defects in Neonates. A Systematic Review and meta-analysis**

**Authors:** William Nelson, Stephen Simon Kishinhi, Jovine Bachwenkizi, Said Salehe, Saumu Shabani, Magdalena Shao

**Affiliation:** Department of Environmental and Occupational Health, School of Public Health and Social Sciences, Muhimbili University of Health and Allied Sciences

**Background:** Recently, air pollutants including carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>) and particulate matter (PM) have been associated with an increased adverse pregnancy outcomes including congenital anomalies - a main cause of infant mortality. However, there is inconsistencies and uncertainties concerning the effects of specific pollutants on specific congenital anomalies. There has been a meta-analysis of ambient pollutant exposures and risk of congenital anomalies (Vrijheid et al., 2011) which did not analyze the association of the pollutants with the risk of neural tube defects (NTD) because of the inadequate availability of evidences at that time.

**Aim:** To systematically review epidemiologic evidence and conduct meta-analyses on the risk of NTD in neonates per unit increase in maternal concentrations of PM<sub>2.5</sub>, PM<sub>10</sub> and NO<sub>2</sub> during the first trimester of pregnancy.

**Methodology:** Using database searches and other approaches, we identified 7 relevant epidemiologic studies that examined the risk of NTD per unit increase in continuous concentrations of PM<sub>2.5</sub>, PM<sub>10</sub> and NO<sub>2</sub> published in English by October 2020. Articles were included in meta-analysis if they defined the congenital anomalies as either NTD, spina bifida or anencephaly as an outcome, and studied human prenatal exposure to identified

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ambient air pollutants using measured concentrations. Generic Inverse Variance method in Review Manager 5.3 (RevMan) was used to provide estimates for the relative association and standard error from the odds ratio (OR) or relative risk retrieved from studies.

**Results:** Increase in continuous concentrations of NO<sub>2</sub> and PM<sub>10</sub> exposures in the first trimester were significantly associated with an increase in the risk of NTD; OR = 1.06; 95%CI, 1.01 – 1.12; p=0.03 and OR = 1.15; 95%CI, 1.04 – 1.27; p=0.005 respectively. Pooled results from PM<sub>10</sub> exposures were, however, associated with significant heterogeneity (I<sup>2</sup> = 82%, p=0.0009). Random-effects model analysis resulted in a statistically non-significant association between PM<sub>10</sub> exposures and the risk of NTD. PM<sub>2.5</sub> exposures did not result in a statistically significant increase in risk of NTD (OR = 1.06; 95%CI, 0.88 – 1.27; p=0.54) or spina bifida (OR = 1.07; 95CI, 0.86 – 1.34, p=0.53).

**Conclusion:** Our study has found some evidence for an effect of ambient air pollutants on the risk of neural tube defects. However, there is a gap of information on personal exposure to ambient pollutants and the effect of cocktail of exposures on congenital anomalies.

**Recommendations:** Further investigation is warranted.

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**Cardiovascular risk profile among patients on psychotropic medications admitted at Mirembe Mental Health Hospital**

**Authors:** Dr Azan Nyundo, Dr John Meda

**Affiliation:** The University of Dodoma

**Background:** Psychiatric conditions are major contributors of global burden of disease worldwide. People with severe mental illnesses (SMI) have significantly reduced life span which can be attributed to comorbid physical illnesses including cardiovascular conditions. Although SMI significantly increases the risk for cardiovascular disorders, there is enormous disparity on cardiovascular disease prevention and the management efforts between general population and individuals with psychiatric disorders.

**Aim:** To describe cardiovascular risk profile and associated factors in a population with severe mental illnesses on psychotropic medications admitted at Mirembe Health Mental Hospital in Dodoma Tanzania.

**Methodology:** A cross-sectional hospital-based study involving 244 patients admitted at Mirembe Hospital. All patients who were on treatment for at least 6 months were recruited. Patients in the acute phase or not able to comprehend and follow the assessment procedure were excluded. Cardiovascular risk was computed based on the Framingham general cardiovascular risk score. Categorical variables were presented as frequencies and proportions while continuous variables summarized as medians with inter-quartile ranges. Linear regression was used to determine the correlates of cardiovascular risk, and all statistical testing was done at the 95% confidence interval with a P-value of <0.05 considered to be statistically significant.

**Results:** Of the 244 of patients, majority 201 (82%) were males, 133 (55%) were never married, 71 (29%) were either divorced or widowed and (74.6%) had attained primary

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education or below. About 165(67%) of the participants had normal BMI, Haloperidol and Chlorpromazine were the most frequent used medications with 108(44.26%) and 92(37.7%) of participants respectively. Most of the participants 228(93%) had low 10-year cardiovascular risk, while 12 (5%) and 4 (2%) were in moderate and high 10-year cardiovascular risk respectively. Under multiple linear regression, females had an estimated 3.04 decrease in for cardiovascular risk ( $p<0.0001$ ), while a year increase in age increased the cardiovascular risk by 0.3, ( $p<0.001$ ) and a unit increase in LDL level increased the cardiovascular risk by 0.6,  $p< 0.04$ .The type and duration of medications were not significantly correlated with cardiovascular risk.

**Conclusion:** This study reveals a low 10-year cardiovascular risks for patients with SMI on older generation antipsychotics. Similar to the general population, specific risk factors for this population must be addressed to prevent the unfavourable cardiovascular outcome.

**Recommendations:** Integration of cardiovascular care in psychiatric settings that screen and treat cardiovascular risks will be beneficial.

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**Theme: Ncd Burden and Trends****Prevalence, Patterns and Predictors of Obstructive Coronary Artery Disease among Patients undergoing Coronary Angiography in Tanzania.**

**Authors:** Khuzeima Khanbhai, Pedro Pallangyo, Smita Bhalia, Regan Valerian, Mazen Albaghdadi, Nino Mihatov, Peter Kisenge, Tulizo Shemu, Tatizo Waane, George Longopa, Yona Gandye, Honoratha Maucky, Maarten Hoek, Peter O Brian, Mohamed Janabi

**Affiliation:** Jakaya kikwete cardiac institute and madaktari africa

**Background:** Coronary artery disease (CAD) is the leading cause of morbidity and mortality worldwide. Healthcare systems in low- and middle-income countries are developing the infrastructure to address the rising epidemic of cardiovascular disease. In the current study, we describe the prevalence, patterns, and predictors of angiographically-detected CAD among patients receiving care at the first and only public cardiac catheterization laboratory in Tanzania: the Jakaya Kikwete Cardiac Institute (JKCI).

**Aim:** To describe demographic patterns of all suspected CAD patients who underwent cardiac catheterization. for suspected CAD. 2) To characterize CAD and determine demographic and clinical characteristics associated with CAD. with the disease.

**Methodology:** Retrospective chart review of cases that underwent cardiac catheterization for suspected CAD at JKCI. We included adults over 18 years of age who were admitted and underwent cardiac catheterization between 2013 and 2019. The following were abstracted, demographics information, presentation, self-reported medical history, diagnostics, treatment data, and in-hospital clinical events. We used an existing registry to abstract data from the medical record. We will exclude incomplete dataset. and cases under 18 years of age.

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**Results:** The prevalence of obstructive CAD among all patients undergoing angiography was 48.5%(n=488). The mean age of those with obstructive CAD was 60.6 years and nearly 90% of participants were aged 50 years and above. Males comprised 65%(n=616) of all participants and over two-thirds of participants had excess body weight. 69% of participants had a history of hypertension, 33.8% were diabetic, 54.2% had dyslipidemia, and 7.6% had a positive smoking history. Among patients with CAD, single vessel involvement was more common (43.6%) and LAD was the most involved vessel (76%). During multivariate analyses, male sex (OR 2.6, 95% CI 1.6-4.1, p<0.001), BMI  $\geq$  25 (OR 2.2, 95% CI 1.3-3.8, p<0.01), and diabetes mellitus (OR 3.2, 95% CI 2.0-5.2, p<0.001) were independent predictors of obstructive CAD.

**Conclusion:** The prevalence of obstructive CAD in our study is comparable to rates reported in registry data of patients undergoing coronary angiography in high-income countries (i.e., ACC NCDR CathPCIRegistry). The burden of CAD and its associated risk factors are considerable in Tanzania and represent a major public health concern.

**Recommendations:** We recommend that due to rise in NCDs the burden of ischemia heart disease is in the rise and mimicking a pattern comparable to developed world.

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**Prevalence and Factors Associated with Substance Use Among Police Officers in Dar es-Salaam, Tanzania**

**Authors:** Harrieth P Ndumwa, Belinda J Njiro, Thomas Kawala, Samuel Likindikoki

**Affiliation:** Department of Psychiatry and Mental Health, Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania, Tanzania Police Force, Kilwa Road Police Hospital, Dar es Salaam, Tanzania

**Background:** Police Officers have a higher prevalence of substance use as compared to the general population mainly due to the nature of their work. Several factors such as socio-demographic factors, operational stressors, rank and duration at work have been found to be associated with substance use among Police Officers. There is paucity of information about the magnitude and risks associated with substance use among people in armed forces including Police Officers in Sub-Saharan African countries. Findings from this study will be of utility in informing mental health prevention and response services.

**Aim:** To assess the prevalence and factors associated with substance use among Police Officers in Dar es Salaam.

**Methodology:** A cross-sectional study was conducted among Police Officers in Dar es salaam, Tanzania using the quantitative data collection method. Self-administered structured questionnaires were used to collect information.

**Results:** A total of 497 Police Officers (76.6% = males) with median age of 37.0 (interquartile range =17) years participated in the study conducted between April 2019 to December 2020. Less than half (40.2%) of the participants reported to ever used any substance, whereas only about a third (31.4%) of the participants reported to have used any substance in the past three months. In the multivariate analysis, being single (Unadjusted

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Odds Ratio [UOR]: 3.44, 95% CI [Confidence Interval]:1.14-10.38,  $p < 0.028$ ) compared to being married increased the odds of alcohol use. General duties had about three times odds of exposure to alcohol use (UOR): 2.984, 95% CI [Confidence Interval]: 1.07-8.29,  $p < 0.036$ ) compared with specialised units.

**Conclusion:** Findings from this study show that different substances especially alcohol are commonly used by the Police Officers in Dar es Salaam.

**Recommendations:** There is a need to screen for commonly abused substances in the Police Force and provide help and referral where necessary.

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**Pattern,distribution and outcome of otorhinolaryngological conditions at emergency department,Muhimbili National Hospital, Dar es Salaam.**

**Authors:** Irene Adabu, Kassimu Babu, Willybroad Massawe

**Affiliation:** Otorhinilaryngology MUHAS AND MNH STAFF

**Background:** Introduction: Otorhinolaryngological diseases attribute to a major cause of patients reporting to the emergency department and some of them are life threatening and requires immediate intervention. This Early diagnosis and management result in reduction in morbidity and mortality.

**Aim:** To determining pattern, distribution and outcome of patients with ORL conditions presenting at emergency medicine department in Muhimbili National Hospital.

**Methodology:** This was a cross-sectional hospital based study where patients attending MNH emergency department presenting with Otorhinolaryngological conditions were included with sample size of 289 patients. Age, sex ,Otorhinolaryngological conditions, time lapsed from the onset of Otorhinolaryngological condition to arrival at MNH ,disposition after receiving emergency services was filled after providing emergency care to the patient and the outcome of Otorhinolaryngological emergency post disposition at emergency department

**Results:** A total of 289 patients with ORL conditions were included. Male to female ratio was 1.7:1 with most of the patients 133 (46%) belonging to age group 0-10 year. Among the ORL conditions, upper aerodigestive tract conditions were the most prevalent (52.9%) while head and neck conditions were the least encountered (4.8%).Nasal (62.5%) and upper aerodigestive tract (56.2%) anatomical sites were predominantly involved with Otorhinolaryngologicalconditions in younger age groups below ten years while head and neck conditions (50%) dominated the elderly above 50 years. Foreign bodies in the ear, nose and upper aerodigestive tract were successfully removed

**Conclusion:** Otorhinolaryngological conditions occurred in all age groups. Majority of patients were children under ten years with mainly foreign bodies in ear, nose or upper aerodigestive tract. Most of the patients had a successful outcome after receiving emergency care. Malignancy conditions in upper aerodigestive tract reported more than one month and in advanced stage hence required emergency intervention.

**OPEN ACCESS JOURNAL****Recommendations:**

- i. Health education to community and health workers on Otorhinolaryngological conditions and importance of early diagnosis and treatment.
- ii. Otorhinolaryngology patients presenting with clinical features of upper aerodigestive tract conditions should be fully examined and investigated to assess for any disorder in these areas.
- iii. The need for further studies with large sample size and longer study time

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**Prevalence, Types and Clinical Presentation of Heart Failure Among Hypertensive Patients seen at a tertiary hospital in Dar es Salaam, Tanzania. A Cross-Sectional Study****Authors:** Gervas Nvaisonga, Pilly chillo**Affiliation:** Muhimbili University of Health and Allied Sciences**Background:** Heart failure (HF) with preserved or reduced ejection fraction is a common complication in patients with hypertension. Clinical presentations differ based on ejection fraction and may require special attention to diagnose**Aim:** To assess the prevalence, types and clinical presentation of HF among hypertensive patients being followed-up at a tertiary hospital in Tanzania**Methodology:** All known and newly diagnosed hypertensive adults ( $\geq 18$  years) referred for echocardiogram examination at the Muhimbili National Hospital – Mloganzila, between June and December 2019 were recruited. A detailed cardiovascular history, physical, laboratory and echocardiogram examination were performed in all patients. HF was diagnosed according to the Framingham criteria and was further categorized as HFpEF (EF  $\geq 50\%$ ) or HFrEF (EF  $< 50\%$ ), according to the echocardiography findings. Then patients from these two groups were compared in terms of demographic, clinical, laboratory and echocardiographic characteristics.**Results:** Out of 1,246 patients referred for echocardiogram examination, 633 (50.8%) were hypertensive, of whom 346 (54.7%) fulfilled the inclusion criteria and were enrolled. Mean  $\pm$ SD age was  $58.3 \pm 12.4$  years, and 60.4% were females. Mean  $\pm$ SD systolic and diastolic BP was  $152 \pm 23$  and  $91 \pm 15$ , respectively. A total of 102/346 (29.5%) patients were found to have HF. Majority (74.5%) of HF patients had HFpEF and the remaining 25.5% had HFrEF. Compared to HFrEF, those with HFpEF were more likely to be outpatients, older, obese, and with higher mean BP and more left ventricular hypertrophy, all  $p < 0.05$ .**Conclusion:** More than a quarter of hypertensive patients referred for echocardiogram examination at a tertiary hospital in Tanzania have HF, mainly HFpEF. HFpEF differs from HFrEF in terms of BP, obesity status and some echocardiographic parameters, which need to be carefully examined when HF is suspected.**Recommendations:** Active screening for heart failure is especially among obese and uncontrolled HT patients, as they may present with HFpEF which can pass unnoticed

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**Can Diabetes services in Tanzania learn from Global North and improve Diabetes patients' care by using technology for those who need it? : The use of technology to transform Diabetes care for all**

**AUTHORS:** Gideon Mlawa, Shirin Patel, Hnin Sanda, Sreelakshmi Sivakumar, Hamza Hassan, Hassan Rehmani, Nasibu Mwande

**Institution:** Queens Hospital, London UK .North Cumbria Integrated Care NHS Trust, Carlisle UK , Darent Valley Hospital, Kent UK

**Background:** Advance in technology has seen an increase in the uptake of Insulin Pump therapy in the global north countries led by the USA. The technology currently being used for diabetes patients in most countries include Insulin pump, Continuous Glucose Monitoring (CGM), as well as FreeStyle Libre (Flash Glucose Monitoring). The closed-loop system ("artificial pancreas") is another technology option which is still under development. In Tanzania, the use of the above technology is limited to one or two centres. Hindu Mandal Hospital under Prof.Kaushik is leading the way with few patients on Insulin pumps and the use of CGM to guide management of complex diabetes patients with erratic and poor diabetes control. Here is a retrospective audit on the use of Insulin Pump from one of the UK Hospital.

**Aim:** The aim of this study was to measure the practice in one of the UK Hospital in the use of insulin pumps for the treatment of diabetes and whether it is in keeping with NICE guidelines.

**Methodology:** This was a retrospective study looking at a 1-year data. The following demographic data were recorded: age, gender, duration on an insulin pump. Number of patients commenced on an insulin pump at the preconception clinic, during pregnancy and paediatric clinics.

**Results:** 80 patients were identified, aged range from 16-70 years old. Duration on CSII varied from 2months to 11 years. Data source obtained from patients notes, Diabeta and Vectra software available in the diabetes department .98 %(79) patients had type 1 diabetes, 1 patient was type2 diabetes, 1 patient had LADA.13%(11) patients were started on insulin pump from another European country, or other Hospitals in UK.12%(10) patients had insulin pumps commenced in paediatric age mainly for poor glycaemic control, 5%(4) patients were started on Insulin pump during pregnancy due to poor control or hypoglycemia.

**Conclusion:** Diabetes patients have to be offered high-quality care and evidence-based diabetes treatment including insulin pumps. Insulin pump therapy is recommended for adults and children over the age of 12, with type 1 diabetes with recurrent disabling hypoglycemia or poorly controlled diabetes (HbA1C>8.5%) despite being on multiple daily injections.

**Recommendations:** African countries including Tanzania have a decade to introduce the use of technology such as Insulin Pump therapy, CGM, Freestyle Libre as well as artificial pancreas in order to provide high quality care to both type 1 and type 2 diabetes

**Theme: Multisectorial Approach****Analysis Of Existing Polices, Readiness Opportunities And Challenges To Enact And Implement Sugar-Sweetened Beverage Tax****Authors:** Twalib Ngoma**Affiliation:** Ocean Road Cancer Institute**Background:** Country estimates show that Non-Communicable Diseases (NCDs) accounted for 31% of all deaths in Tanzania in 2012 and continues to rise, leading to premature mortality and loss of productivity. The 2030 Agenda for SDGs adopted at the United Nations Summit on Sustainable Development in September 2015 recognizes NCDs as a major challenge for sustainable development**Aim:** To estimate the economic burden of NCDs (Obesity and its associated diseases such as Diabetes, CVD-Hypertension, and stroke).**Methodology:** To analyze the economic burden of obesity and related diseases, Survey data collected by Economic and Social Research Foundation (ESRF) in 2019 combined with data from Tanzania Health Management Information System were used for this analysis. The burden of obesity and its associated diseases is estimated by first analyzing the proportion of mortality caused NCDs. We then estimate the direct economic costs associated with treating NCDs, including all the costs paid by individuals for health care services, travel and accommodation during treatment, and costs incurred by the government in preventive and curative programs of NCDs. Finally, we estimate the indirect economic costs incurred by the individuals and households, including the income loss and labour market outcomes due to lost working hours.**Results:** Total NCD deaths were estimated to be 134,561 in 2016. Among NCDs, the top killers that account for more than 80% of all NCD deaths include cardiovascular diseases (53,170 deaths annually) equivalent to 65% of all NCD deaths, cancers (9,419 deaths) equivalent to 12%, respiratory diseases (2,691 deaths) equivalent to 3%, and diabetes (2,691 deaths) equivalent to 3%. The estimate of per person annual costs for NCDs was \$119.78 in 2019. This includes personal healthcare costs (about \$62.16), travel costs during treatments (\$17.63) and accommodation costs when attending far health facilities (\$39.99). When multiplied by the number of NCD patients, the aggregate national costs of NCDs were \$102.935 million for healthcare costs, \$29.195 million for travel costs, and \$66.222 million for accommodation costs, resulting to total annual aggregate national costs of \$198.352 in 2019. The average monthly income loss per one NCD patient is estimated to be \$91. Caregivers and households lose monthly income of \$43 and \$105 per capita, respectively. When multiplied by number of NCD cases in 2019, national aggregate monthly income loss is estimated to be \$150,693,543 for patients, \$71,206,839 for caregivers and \$173,877,165 for households**Conclusions:** The costs of NCDs to the health system, individuals, households, and government are significant and growing.

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**Recommendations:** Our findings suggest that, policy makers should consider investing massively in prevention of NCDs since it imposes the highest economic burden and implementing fiscal policies have highest impact in reducing overall burden of NCDs.

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**Public and Private Partnerships-PPP; a sustainable model of primary prevention of non-communicable diseases in low resource settings.**

**Authors:** Manase Frank, Selis Tarimo, Janeth Kalinga, Said Mfaume, Rev. Alick Mpele, Rev. Christosila Kalata, Emili Lihawa, Willy Sangu, Rev. Lewis Hiza, Joel Bwemero, Deborah Kalunga.

**Affiliation:** The Community Center for Preventive Medicine "Cimetidine" , Ministry of Health, Ocean road Cancer Institute, Ekenywa ENT Hospital, Tindwa Medical and Health Services, Smiles Dental Clinic.

**Background:** Persistent increase in global prevalence of non-communicable diseases (NCDs) has been reported to affect the developed and developing world. In 2008 alone 14 million premature deaths were reported globally and this number is estimated to rise to 52 million people by 2030, sub-Saharan African being the most affected region. Tanzania is among the most hit nation by NCDs in the SSA. Sustainable innovations to address the burden of NCDs are highly needed. CCPmedicine is a Community-Based-Organization that focuses on prevention of NCDs. This paper reports the process and outcomes of a Community Health Promotion Public Camp conducted in September 2018, Dar es Salaam through a Public and Private partners in addressing the burden of NCDs.

**Aim:** Establish Public and Private Partnerships in addressing the burden of NCDs.

**Methodology:** Through media, public addressing systems, flyers: communities were invited in a three-day health camp that offered health education and screen of risk factor of NCDs.

**Results:** Managerial: common goal were maintained among staff, each institution released staff to participate in the event, physical presence of managers were maintained thought, families were engaged through donations. Clinical: a total of 360 attended 28% and 72% were males and females respectively. Of the number tested, 38% were hypertensive, 25% pre-hypertensive, 23% had elevated blood sugar [diabetes], 46% obesity, 38% Ear Nose and Throat problems and 42% with oral health problems. Among women screened, 4% & 8% were found with risk of breast and cervical and breast cancer, respectively. Among men who screened for prostate cancer 20% were found with risk of the disease.

**Conclusion:** Findings from the Camp indicate that, the burden of NCDs significantly high thus call for effective approaches to reverse the trend. Also the experience shows it is possible for the public and private sector to collaborate their efforts to address the burden of NCDs in Tanzania.

**Recommendations:** Actively engage both Public and Private Sectors for a successful fight of NCDs.

**Consent:** Yes

**Effective Mental Healthcare International Partnerships****Authors:** Chris Baumstead**Affiliation:** CNWL / Mirembe Hospital

**Background:** Central & North West London NHS Foundation Trust and Mirembe Hospital have developed a long lasting partnership since 2010. Apart from many positive outcomes of this partnership there are some key factors which have contributed to its success and sustainability.

**Aim:** To increase the clinical and managerial capacity and knowledge base at Mirembe and to improve treatment outcomes for patients, and provide individual development opportunities for CNWL and Mirembe volunteers participating in the project.

**Project plan:** The partnership has been successful in securing 3 UK Department for International Development (DFID) grants aimed at:

- a) Training for Mirembe staff by CNWL volunteers on short visits to Tanzania,
- b) Training Trainers (“Champions”),
- c) Visits to UK to observe services and identify mentors (through Commonwealth Fellowship Scheme and use of grant funding),
- d) Collaboration on project planning and delivery,
- e) Maintaining consistency of CNWL and Mirembe staff involved, mutual trust and respect, and good communication.

**Progress:**

- i. 170 Mirembe staff trained in TMVA techniques, plus 28 staff in 2 Regional mental health units, 3 Trained TMVA trainers at Mirembe, reduction in the incidence of violence at the hospital, better communication between staff and patients, safer working and treatment environment.
- ii. 44 Mirembe staff trained in assessment and treatment of substance use, 16 “Champions”, new substance use unit opened with qualified and trained staff, income generation projects created for patients (163 participants), Peer Support Worker system established, 123 PSW’s trained with at least 2 PSW’s per ward, public education programme for Carers, schools, colleges, and local media.
- iii. 63 staff and 33 PSW’s and 14 Community workers trained by “Champions” in basics of mental health and substance use assessment and treatment, plus the design and use of activities in effective therapeutic intervention. Improved management structure and functioning. Reduced bed occupancy.

**Lessons learned:** The keys to success and sustainability of this partnership are mutual respect and trust, collaborative individual working relationships, commitment, consistency and continuity of staff involved, joint planning and delivery of programmes, and full support from the senior management of both organisations. Despite a current lack of grant funding the partnership continues to thrive.

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**Recommendations:** Partnerships such as this should be encouraged and supported, preferably between the public and voluntary sectors

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**Assessing the performance of Council Health Management Team: Facilities readiness and provider Competence on providing non-communicable diseases service in Katavi region Tanzania**

**Authors:** Medard Andrew Nguma, DR Stephen M. Kibusi

**Institution:** Department of public health, College of Health Science, University of Dodoma

**Background:** Governance of council health system and management of primary health facilities play critical role on effective delivery of NCDs services. In Tanzania, there is limited data on compliance of councils on governance of NCDs services delivery.

**Aim:** To assess the level of the council management team, facility readiness, and health provider's competences use the Katavi region as a case in Tanzania

**Methodology:** This was a cross-sectional study involving 40 core-members from five council health management teams and 95 health facilities. Core council members were assessed for NCDs compliance and health facilities were assessed for readiness using WHO-Pen standard tools. Three hundred and seventy six health care providers were also assessed for competence in providing NCDs services using a self-administered questionnaire.

**Results:** The mean age of the 40 core-members was 36 +/- 36.2 years, 52% were male and 67% had university degrees. Assistant nurse officers constituted 22.5%, and 52.5% had worked for more than 3 years. Good compliance to NCDs was noted in 20% of the council and this compliance was noted to co-relate with education level of core-members of council management teams ( $P=0.004$ , CI.95%). Most of facilities (60%) assessed showed readiness in provision of NCD services. Public health facilities have shown complimentary readiness by 60%. and facility located in rural settings shown more readiness to provide NCD services it by 61%. Out of 376 health care providers assessed for competence 54.2% were females and their mean age was 31 +/- 30.1 years. Majority (76.5%) had a certificate level of education, and more than half (53.4%) were enrolled nurse. About half of health care providers (49%) had shown high knowledge in providing non-communicable disease services. Health care providers working in dispensaries were less knowledgeable when compared to those working in health Centre (AOR=0.217  $P<0.001$ ), and providers working in urban settings were 8 folds more knowledgeable compared to those in rural settings (AOR=8.037  $P=0.002$ ).

**Conclusion:** Poor compliance of council's health management team in providing NCDs services was noted in this study contributing to unavailability of NCDs services in health facilities.

**Recommendations:** Compliance of facilities to NCDs services should be emphasized to improve NCDs services delivery in primary health care to reduce the congestion in tertiary health facilities.

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**OPEN ACCESS JOURNAL****The Effect of Sugar-Sweetened Beverages (SSB) tax on Obesity Prevalence in Tanzania: A Mathematical Model.**

**Authors:** Martin Chegere , Jires Tunguhole , Fortunata Songora Makene , Twalib Ngoma , Mary Mayige and Jovin Lasway

**Affiliation:** University of Dar es Salaam; Sokoine University of Agriculture; Economic and Social Research Foundation; Muhimbili University of Health and Allied Sciences; and National Institute for Medical Research.

**Background:** In Tanzania, obesity prevalence rate has been rising over time thereby contributing to catastrophic health and economic consequences associated with the growing burden of Non-Communicable Diseases (NCDs). Excessive weight gain can be significantly attributed to consumption of SSBs due to their high sugar content that leads to high caloric intakes. Over the years, Tanzania has demonstrated the willingness to tax alcoholic and SSBs to reduce its consumption and generate revenues. However, evidence on how taxation on SSBs would reduce SSBs consumption, and consequently reduction in obesity prevalence remains limited

**Objectives/Aims:** To investigate the potential impact of SSBs tax on obesity prevalence in Tanzania using mathematical simulation model

**Methodology/ Project plan:** Survey data collected by Economic and Social Research Foundation (ESRF) in 2019 combined with the third wave of the Tanzania National Panel Survey (TNPS) collected in 2012/13 were used for this analysis. The mathematical model developed compares two populations: the reference population which is unchanged (the third wave of TNPS) and a counterfactual population in which SSB tax intervention has been introduced. Price elasticities derived from consumption data for SSB and their substitutes from the ESRF survey data were used to estimate the effect of the tax on SSB consumption. Changes in SSB prices due to SSB tax were translated into changes in SSB consumption and subsequent change in energy intake. A mathematical relationship linking energy intake to body weight is applied to estimate the body mass change by age groups. The change in body mass by age groups is merged with the reference population to estimate changes in body mass index and obesity

**Results/ Progress:** Imposing a 20% SSB tax in Tanzania is predicted to reduce obesity by 6.6% overall and by 12.9% and 5.2% in adult males and adult females, respectively. The average overall reduction in energy intake is estimated to be 76.1 kilojoule per person per day

**Conclusion/ Lessons learned:** There is a strong evidence on the potential for fiscal policies to reduce obesity and its related NCD's, the study proposes actionable recommendations for implementation of an effective tax on SSBs.

**Recommendations:** The Government should review current SSB's excise tax to accommodate recommendations from the available evidence.

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**Hospital Pharmacists have roles to play In Reducing NCD costs**

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Doi: 10.4314/tmj.v32i1.472.g260

**OPEN ACCESS JOURNAL****Authors:** Dr. Deus Buma**Affiliation:** Muhimbili National Hospital

**Background:** Hospital Pharmacists are among of the medical teams. In the developed countries, their roles are well explicit in dispensing medications, identification of drug related problems, drug information, selection of proper medication regimens, dose adjustments and inventory management. On the other hands, pharmacists in the developing countries are underutilized and seldom are engaged in surgical procedures). The aim of this study was to evaluate costs avoided when pharmacists were engaged and perception of other medical team towards pharmacists in the surgical procedures at MNH.

**Aim:** The aim of this study was to evaluate costs avoided when pharmacists were engaged and perception of other medical team towards pharmacists in the surgical procedures at MNH.

**Methodology:** This was a comparative observational study between two time points. The period from 1st April 2016 to June 30th 2018 when pharmacists were not working in the surgical procedures (before-era). This period was compared to 27 months after, when pharmacists were working in the surgical procedures (After-era). We established number of patients served between two periods. We collected data related to cost of medications and medical supplies used. We interviewed 127 experienced medical staff in surgical procedures.

**Results:** There were 32568 patients operated in the before-era, 10317(31.7%) were males while 40195 patients were operated during after-era, 16152 (40.2%) were males. Before-era, the total cost of medicines and medical supplies used was TZS 8,631,547,372 while TZS 6,695,832,350 was used during after- era, serving about TZS 1,935,715,021 (28.9%). Of the interviewed staff, all nurses, health attendants and 95% (39) of doctors positively perceived pharmacists' engagement in surgical procedures. During after-era, 93% (118) of other medical staff were satisfied with pharmacists' services in the surgical procedures. Few experienced medical staff disliked pharmacists' services because of their lack of surgical procedures knowledge.

**Conclusion:** Pharmacists have roles to play in the surgical procedures, their engagement significantly serves hospital expenditures for medicines and medical supplies.

**Recommendations:** Studies have to be conducted to ascertain additional usefulness of pharmacists in the surgical procedures.

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**Theme: Care And Treatment**

**Is Fluoxetine the simple remedy for post stroke motor recovery in Low income countries?**

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**Authors:** Emmanuel A. Massawe, Seif I. Sharif, Andre C. Vogel, Dylan R. Rice, Farrah J. Mateen, Notburba A. Mworira, Deus C. Buma, Boniphace Kapina, Novath N. Mukyanuzi, Kigocha L. Okeng'o

**Affiliation:** Muhimbili National Hospital

**Background:** Fluoxetine held particular promise for stroke survivors in lower income countries, given its widespread availability, listing on Essential Medicines Lists, clinical familiarity through use in major psychiatric disorders, and its low cost. The hope that fluoxetine would fill a therapeutic void for motor recovery, particularly in SubSaharan African populations, where physical therapy is limited and stroke patients are younger overall, led to our phase II study of fluoxetine 20mg daily for ischemic stroke survivors in urban Tanzania.

**Aim:** Our aim was to determine if the use of fluoxetine for ischemic stroke survivors would be safe and well-tolerated for 90 days post-stroke in this setting.

**Methodology:** Between November 2019 - May 2020, MAMBO enrolled 27 Tanzanian participants with new-onset motor deficits from ischemic stroke, presenting within 14 days of symptoms, and meeting strict enrollment criteria that mimic the FLAME2 study in France. Each participant received a head CT scan and brain MRI to confirm the presence of an acute ischemic stroke.

**Results:** The average age was 53 years and 8 participants were female. Median NIH stroke scale score at hospital presentation was 11 and the duration of stroke symptoms averaged 3.3 days upon enrollment (range 1-12). No patient received acute thrombolysis. 25/27 participants (93%) survived to the 90-day follow up. One died in the setting of systemic gastrointestinal illness which included a low serum sodium (nadir 120 mmol/L) but had stopped fluoxetine two weeks before (duration of fluoxetine administration: 33 days). One died of respiratory failure secondary to Covid19. One dropped out after 60 days but is known to have survived. One patient had generalized seizures. Of the 24 remaining participants, the average sodium level at 90 days follow up was 139 mmol/L (range 133-146) and alanine transaminase was 29 U/L (range 13-134). Adherence was excellent (96%). The median modified Rankin Scale score among survivors at 90 days was 2 (range 0-4). Although our sample was small, there was no bone fractures. Median 90-day depression on the PHQ9 was 4 (minimal depression).

**Conclusion:** Fluoxetine is well tolerated in highly-selected ischemic stroke up to 90 days post stroke in lower income countries. Patients who used it had less depression and improved Modified Rankin Scale scores at 90 days.

**Recommendations:** More larger studies to be done on motor recovery post stroke using fluoxetine.

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**Metronomic oral etoposide for palliation in children with malignancy**

**Authors:** Elton Roman (MD), Salama Mahawi (MD), Patricia Scanlan (Pediatric Oncologist), Kristin Schroeder (Pediatric Oncologist), Sr. Marie Jose Voeten (MD).

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**Background:** Oral etoposide has been used with varying results for palliative oncology conditions across the world. Given the relatively low intensity of primary treatments offered in Sub-Saharan Africa it is hoped that metronomic treatments might be more successful in this setting than elsewhere.

**Aim:** The aim is to study the effectiveness of Metronomic Oral Etoposide (MOE) treatment for children with life-limiting malignant disease in Tanzania.

**Methods:** This is a retrospective study of patients less than 18yrs enrolled from Jan 2018 to May 2020 attending 4 Tanzanian collaborative hospitals across Tanzania. Patients on MOE were identified from the database and their medical records were retrieved. The data was collected using a structured questionnaire. All children who were given MOE 40mg/m<sup>2</sup>/day for at least a month and followed monthly were included.

**Results:** 226 children were enrolled. 57% were males. The median age was 8years. The commonest malignancies were: retinoblastoma 19%, rhabdomyosarcoma 12.8%, AML 12.3%, Lymphoma 11%, Nephroblastoma 10.6%, Neuroblastoma 9.7%, and osteosarcoma 7.9%. All were considered palliative at the time MOE began. 53.5% began MOE due to failed standard regimens and 46.4% of the children were deemed palliative at diagnosis. 23.7% experienced treatment related side effects including vomiting, constipation, anemia and neutropenia. 50% of the children were asymptomatic achieving stable disease (SD)/complete remission (CR) with six months treatment with MOE. 50% had a progressive disease. 20% were alive a year after starting MOE. Overall MOE appeared more effective in children who failed standard curative regimens than those where palliative upfront at diagnosis.

**Conclusion:** Metronomic oral etoposide has shown to be well tolerated but required regular review. Symptoms were palliated, quality and duration of life improved for the majority of children treated. Metronomic etoposide is a valuable palliative care tool. The role of metronomic oral chemotherapy agents should be investigated further.

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**Target Heart rate in Cardiac Rehabilitation and exercise program.**

**Author:** Vasanth Narayanan

**Affiliation:** DR. Reginald Mengi PWD Foundation.

**Background:** The article briefs the importance of determining the target heart rate and benefits of exercising with in the Range of Target Heart Rate (RTHR). The evidence has supported the fact that the physiological changes in the myocardial and vascular system only occurs if the exercise is done with in the RTHR. The duration of exercise with in RTHR determines the effect on the coronary arteries which varies between the reversible sympathetic responses to long lasting hormonal influence. The improved vascularization (collateral circulation), improved oxygen supply to myocardium to meet the MVo<sub>2</sub>, improved cardiac output and reduced peripheral vascular resistance are further positive effects of working out with perfect intensity, duration, frequency and mode (FITT-Frequency, Intensity, Time and Type).

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**Aim:** To determine the target heart rate and benefits of exercising with in the Range of Target Heart Rate (RTHR).

**Methods:** The tool for checking Heart Rate (HR) have become very handy in the recent years and now the android phone can be used to check the heart rate. This availability of tool has raised the question “how many of us teach our clients about the use of HR and its importance of monitoring and exercising within RTHR?”

**Conclusion:** The commonly used method of calculating THR is karvonen formula with resting HR and Maximal HR. The Maximal heart rate for individual with no history of ischemia or cardiac risk factors is  $220 - \text{Age}$ . For vulnerable individuals it is calculated with the ETT (Exercise Tolerance Test). The Rating of Perceived Exertion scale is used to mark the intensity and determine the limits of the individuals in the rehabilitation process. The article aims to improve quality of home rehabilitation program for clients post MI. The article will give adequate information about calculating Range of Target heart Rate, physiological effect of exercising within the RTHR and its benefits and importance.

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**Exploring Spirituality Issues in Palliative Care in Muheza District Council, Tanzania.**

**Authors:** Veronica Mkusa<sup>1</sup>, Christina V. Malichewe<sup>3</sup>, Lali Chania<sup>1</sup>, Kerry Laurino<sup>2</sup>, Emma Edwards<sup>2</sup>

**Affiliation :** <sup>1</sup>IMA World Health, Dar es Salaam, Tanzania, <sup>2</sup>IMA World Health, Washington DC, USA, <sup>3</sup>Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania

**Background:** Religious leaders are respected members of many communities in the world; the same applies to Africa, including Tanzania. The country has a population of about 54 million people the majority of which belong to a religion. Religious leaders have been found to have a potential role in the health of a community, especially during times of sickness and death. Despite religious leaders' respected role in the communities of Tanzania, little is known about their involvement in the care of those with life-threatening illnesses.

**Objective:** The purpose of the study was to explore the experience of religious leaders regarding care of patients suffering from life-threatening illnesses. Specifically, the study seeks to understand i) the role of religious leaders in providing spiritual support in Palliative care; ii) traditional beliefs as they relate to life-threatening illness; and iii) the role of religion and faith at the end of life.

**Methodology:** The study employed qualitative methods to understand religious leaders' views about their experiences taking care of patients with life-threatening illnesses in Muheza District Council. The sample was comprised of ordained Christian and Muslim leaders, who were reached through a Purposive Sampling Technique. 12 religious leaders were interviewed to reach a thematic saturation. Data was collected using a semi-structured interview guide with the aid of tape recorder. Data was transcribed, coded, aggregated into thematic areas, processed, and analyzed.

**Results:** The study observes that religious leaders play a significant role in providing spiritual support for patients with life-threatening illnesses through prayer and sharing

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religious texts. They also provide social support including provision of food, funds for medicine, and sensitization of congregants to donate to charity events in support of these patients. Spirituality is seen as a pathway of life after death. Spiritual leaders can help in alleviating stigma related to traditions and cultural beliefs around life-threatening illnesses. For example, there is a belief that longstanding illnesses such as Cancer and HIV/AIDS are punishments from God or the stricken person's ancestors. Some associate life-threatening illnesses with witchcraft. The study also observes that religion and faith plays a role at the end of life, i.e. burial prayers that comfort the family and help in the bereavement. The term "Palliative care" was new to the majority of the religious leaders (75% n=9) though they have been practicing it throughout their work.

**Conclusion:** Religious leaders and spirituality have been observed as significant components in Palliative care and serve to improve the quality of life of patients with life-threatening illnesses in Muheza District. Further research on spirituality in Tanzania is needed so that the Palliative care teams can improve services in this area.

**Recommendations:** Organizations can conduct training with religious leaders about Palliative Care in Muheza District Council so that they can implement best practices as required. Finally, organizations and institutions working in Palliative care can strengthen their palliative care delivery by adding team members from other relevant disciplines including religious leaders.

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**Challenges in the management of Retinoblastoma**

**Authors:** Nicholaus Benedicto, Anna Sanyiwa, Suzane Mosenene, Milka Mafwiri, Celina Mhina, John Kisimbi

**Affiliation:** Muhimbili University of Health and Allied sciences

**Background:** Retinoblastoma is the most common childhood intraocular malignancy that accounts for 2.5-4% of all pediatric cancers in developing countries, with a high prevalence in Sub-Saharan Africa. It affects 1:20000 live births and 90% of these are diagnosed before the age of five years. According to an unpublished report on the prevalence of retinoblastoma among pediatric cancers admitted in the oncology ward at MNH was 23% in 2016. This was conducted as a baseline study in evaluating the retinoblastoma program which started in 2016 at MNH.

Enucleation is a surgical removal of the eye leaving behind the extraocular muscles and orbital contents and it is curative in more than 95% of patients with unilateral retinoblastoma. Despite the fact that primary enucleation has been reported to be curative in >95% of children with retinoblastoma, the rate of parental/caregivers refusal of enucleation is still high in African countries compared to developed countries. The initial refusal rate has been reported to be up to 100% in developing countries compared to 25% developed countries. Factors leading to parental/caregiver refusal for enucleation are not well known in Tanzanian context. Knowing these factors and addressing them is crucial for improving the survival rates of retinoblastoma patients.

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**Aim:** To determine factors associated with refusal for enucleation among parents/caregivers of children with retinoblastoma attending MNH between Jan to Dec 2019.

**Methodology:** This was a hospital based cross sectional study which employed a mixed method approach. This approach involved data collection both quantitatively and qualitatively. Quantitative method was used to determine factors associated with refusal for enucleation from parents/caregivers of children with retinoblastoma. To get more insight on factors for refusal, qualitative exploratory design was also used for parents or caregivers who refused enucleation.

**Results:** This study involved 50 parents/caregivers of children with retinoblastoma who attended Muhimbili National Hospital during the study period. Most participants were females, aged between 19-29 years, married and had primary level education. A quarter of patients indicated for enucleation for retinoblastoma at MNH refused enucleation. This proportion is high, and hinders timely and proper management and this is the barrier to survival of children with retinoblastoma. Most parents/caregivers refused enucleation because of their perception towards appearance of the child after enucleation, social and religious beliefs, poor socio-economic status and lack of health insurance coverage were among the contributing factors for refusal. Refusal for enucleation was associated with disease progression and eventual death.

**Conclusion and Recommendations**

- i. Provision of ocular prosthesis and protective glasses is encouraged to all children after eye removal to improve appearance and reduce the social stigma.
- ii. The hospital needs to help all children with retinoblastoma get access to free medical care or pay a minimal contribution of health services through health insurance coverage.
- iii. There is a need to increase awareness and knowledge about the nature of the disease to the community, through campaigns, medias etc.

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**Scintigraphy bone metastatic patterns of prostate cancer at Ocean Road Cancer Institute, Dar es salaam - Tanzania**

**Authors:** Revelian Selestin Iramu, Hilda Makungu, Lulu Sakafu

**Institution:** Ocean Road Cancer Institute, Dar es salaam - Tanzania, Muhimbili National Hospital, Dar es salaam- Tanzania

**Presenting Author:** Revelian Selestin Iramu

**Background:** Prostate cancer is the second most common malignancy in the world. It is the leading cause of morbidity and mortality among men. The most common metastatic site in prostate cancer is the bone. The aim of this study was to find patterns, frequencies and associated factors of bone metastasis among prostate cancer patients attending Ocean Road cancer institute

**Aim:** To determine bone scintigraphy patterns in patients with prostate cancer attending Ocean Road Cancer Institute from June 2014 to June 2016

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**Methodology:** This was a retrospective hospital based descriptive study that was conducted at the nuclear medicine department of the ORCI. A total of 139 patients with prostate cancer were attended from June 2014 to June 2016 for bone scan recruited. Whole body scanning was performed 3 h after injection of 700MBq 99mTc methyl diphosphonate. A structured data collection tool was used to record the demographic information, laboratory and histological information from the patients files. Data analysis was done using SPSS version 20. Cross tabulations and Chi square were used for assessing statistical association and comparing proportions respectively. A p - value of less than 0.005 was considered statistically significant.

**Results:** Among 139 prostate cancer patients included in the study, bone metastases were found in 77 patients. The prevalence was higher in the age group between 60 and 79(56.3%) Patient who had PSA level of more than 20ng/ml and Gleason score of more than 7 were noted to have higher skeletal metastasis and the difference was statistically significant for both [p-0.0001]. Spine was the most common site for bone metastasis constituting 72 patients (51.8%) and lumbar spine was more frequently affected (48.2%) followed by thoracic(41.0%).

**Conclusion:** The prevalence of skeletal metastasis in patients with prostate cancer attending ORCI was high (55.4%). The prevalence was higher in patients with PSA level more than 20 and those with Gleason score of more than 7. Spine was the commonest site for metastasis with lumbar being the most affected site.

**Recommendations:** Bone scintigraphy should be done to all patients with prostate cancer as baseline study particularly to those with PSA level more than 20ng/ml and Gleason score of more than 7

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**Theme: Prevention And Promotion****The Prevalence of S-Hemoglobin and Baseline Knowledge on Sickle Cell Disease among Pregnant Women Attending Antenatal Clinics in Dar-Es-Salaam, Tanzania.**

**Authors:** Hilda Tutuba, Agnes Jonathan, William Lloyd, Fredrick Luoga, Emanuela Marco, Paschal Ruggajo, Irene Kida Minja, Emmanuel Balandya.

**Affiliation:** Sickle Pan Africa Research Consortium (SPARCO), Muhimbili University of Health and Allied Sciences

**Background:** Sickle cell disease (SCD) is the single most important genetic cause of childhood mortality globally. Newborn screening is the recommended intervention aimed at early identification of babies with SCD and their linkage to care in order to reduce the morbidity and mortality due to SCD. In most countries in Sub-Saharan Africa, most women of reproductive age have limited knowledge on SCD and are unaware of their SCD status, hindering likelihood of screening their newborns for SCD.

**Aim:** The aim of this study was to determine the prevalence of S-hemoglobin and assess the baseline level of knowledge on SCD among pregnant women attending antenatal clinics in urban settings in Dar es Salaam, Tanzania.

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**Methodology:** This was a descriptive cross-sectional study which involved pregnant women (20 to 28 weeks of gestation, with no history of blood transfusion in the previous 4 months prior enrollment) attending antenatal clinics at Buguruni health center and Mbagala hospital in Dar Es Salaam, Tanzania in 2020. Purposeful sampling technique was used to identify participants. A total of 300 consented pregnant women were enrolled into the study. Structured questionnaire was administered to all participants to assess demographic characteristics, attitude and knowledge on SCD. All participants were subsequently screened for SCD using Sickle SCAN point-of-care test (manufactured by BioMedomic Inc., USA) to identify the sickle cell status. The data were analysed using SPSS version 23.

**Results:** Out of the 300 pregnant women, 48 (16.0%) had S-hemoglobin (47 [15.7%]HbAS and 1[0.3%]HbSS) while 252[84.0%] were HbAA. All participants had never screened for SCD before and all did not know their sickle cell status.235 (78.3%) had ever heard of SCD and majority of them heard from the streets (48.5%), few had heard from media (16.9%), while only 9 (3.8%) heard from hospitals. 107 (35.7%) knew SCD is an inherited disease. 84 participants (28%) knew that parents who are phenotypically normal may have a child with SCD (if both are carriers of S-hemoglobin). Only 52 (17.3%) knew blood to be the specimen used in screening for SCD. With regards to common signs and symptoms of SCD, the following were identified by participants: Anaemia (128 participants, 42.7%), Pain (66 participants, 22.0%), Jaundice (56 participants, 18.7%) and dactylitis (43 participants, 14.3%)

**Conclusion:** Despite the high prevalence of S-hemoglobin among pregnant women attending antenatal clinics in urban settings in Tanzania, there is very low level of knowledge on SCD and personal knowledge of SCD status.

**Recommendations**

- i. Antenatal clinics should be utilized as a platform for health education and maternal screening for SCD to increase awareness on SCD and personal awareness on SCD status among pregnant women.
- ii. Other channels of communication such as community health education and mass media may be used in providing proper information on SCD.
- iii. Studies should be done to evaluate if maternal screening may increase the uptake of newborn screening.

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**Predictors and outcome of cardiac arrest in paediatric patients presenting to EMD-MNH**

**Authors:** Amne O. Yussuf, Hendry R. Sawe, Said S. Kilindimo, Elishah N. Premji, Hussein K. Manji, Alphonse N. Simbila

**Affiliation:** Muhimbili University of health and allied sciences

**Background:** Paediatric cardiac arrest causes mortality, disability and health care dependence. In Sub Saharan Africa, studies have shown that the incidence of in-hospital paediatric cardiac arrest is between 4.1% and 28% in the Emergency Medicine Department (EMD). In Tanzania, 19.1% of patients aged less than 18 years developed cardiac arrest at

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Muhimbili Emergency Department. This further highlights the magnitude of the burden in Sub Saharan Africa (SSA).

**Aim:** To determine the predictors and outcome of cardiac arrest in paediatric patients presenting to Emergency Medicine Department of Muhimbili National Hospital in Tanzania.

**Methodology:** This was a prospective cohort study of all paediatric patients triaged as Emergency Severity Index (ESI) level 1 category presenting to the EMD-MNH from September 2019 to January 2020. All paediatric patients aged 28 days to 14 years, triaged as ESI level 1 category presenting to the EMD-MNH, at the time the study was conducted.

**Results:** During the study period, 3616 paediatric patients presented to the EMD-MNH where by 745 (20.6%) were seen as ESI level 1. From these 481(64.6%) were eligible and consented to be in the study, of whom 38 (7.9%) patients developed cardiac arrest while in the department with the incidence of paediatric cardiac arrest being 1/100 among all paediatric patients seen in the EMD. The overall median age of paediatric patients was 2 years [IQR of 1-5 years]. On the primary survey, almost half of the patients had abnormal breathing and almost one third of patients had abnormal circulation. Tachycardia (for age) was the most frequently reported abnormal vital sign. Sepsis was the most frequently reported provisional EMD diagnosis followed by pneumonia. In the entire cohort, 65.5% patients had low pH, 5.3% had hyperkalemia and 55.7% had high lactate levels. More than half of patients received antibiotics and Intravenous crystalloid fluids. Over a third of patients required oxygen therapy and less than 10% were intubated. Overall 38 (7.9%) patients developed cardiac arrest in the EMD, more than three quarter died while in EMD and only 5 attained ROSC and survived to ICU admission. The median CPR duration was 30 minutes [IQR 20-38min] and then median duration to return of spontaneous circulation (ROSC) was 11 minutes [IQR 10-13 minutes]. Multivariate regression analysis found that female patients, circulation abnormalities on primary survey, bradycardia for age as the initial vital sign, hyperkalemia, elevated lactate levels, need for oxygen therapy and intubation were independently associated with cardiac arrest in the EMD, whereas receiving antibiotics was associated with a reduced risk of cardiac arrest in the EMD.

**Conclusion:** Mortality after cardiac arrest was high (86.8%) in this Emergency Medicine Department, the incidence of paediatric cardiac arrest was one in one hundred paediatric patients who came to our emergency department and the predictors of arrest were compromised circulation, bradycardia as the initial vital sign, hyperkalemia, elevated lactate levels and the need for oxygen therapy and intubation. Outcome can be improved by strengthening the pre-referral care and providing timely critical management to prevent cardiac arrest.

**Recommendations:** This study has reflected the need for establishing a warning system, developing clinical protocols, advocating earlier referrals and strengthening pre-referral treatment so as to provide a better and timely care of critically ill children. Research interventions aimed to identify and treat children at risk of cardiac arrest within the resource constraints of this setting are also needed.

**OPEN ACCESS JOURNAL****Anaemia among preterm infants attending post natal follow up clinic at muhimbili national hospital**

**Authors:** Zawadi Edward, Helga Naburi, Rodrick Kisenge, Martha Mkony, Alphonse Simbila

**Affiliation:** Muhimbili University of Health and Allied Sciences

**Background:** Preterm infants are vulnerable to a number of medical complications including anaemia, a significant public health problem with consequences on neurodevelopment. This study looked at the magnitude of anaemia and its associated factors among preterm infants at 6 weeks chronological age in a Paediatric clinic.

**Objectives/Aims:** To determine the prevalence of anaemia, its severity and associated factors among preterm infants attending follow-up clinic at Muhimbili National Hospital

**Methodology/ Project plan:** This was a hospital based cross-sectional study conducted among preterm infants at 6 weeks chronological age attending follow-up clinic at Muhimbili National Hospital (MNH) from October 2019 to March 2020. Parental interviews, medical records reviews and haemoglobin assessment was done during the clinic visits. Logistic regression was used to determine the association between studied factors and anaemia.

**Results/ Progress:** The proportion of preterm infants with anaemia at 6 weeks chronological age was 38.4% (142/370) with 74% of these infants having moderate anaemia. Morphological types of anaemia were normocytic (56.3%) and microcytic anaemia (4.9%). Two thirds of preterm infants (62%) were on haematinics supplementation. Moderate preterm born at gestation age 32 to <34 weeks (OR=2.21, 95% CI 1.15-4.25, p=0.017), two or less phlebotomies (OR=2.3; 95% CI 1.23-4.30; P=0.010) and more than two phlebotomies (OR=7.2, 95% CI 3.62-14.16, p=<0.001) were significantly associated with anaemia.

**Conclusion/ Lessons learned:** The proportion of preterm infants with anaemia at 6 weeks chronological age is high despite two thirds being on haematinics supplementation. Moderate preterm and multiple phlebotomies significantly contributed to the occurrence of anaemia.

**Recommendations:** Screening preterm infants for anaemia, appropriate management and close follow up are recommended in order to reduce its burden.

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**Neonatal anthropometrics measurement as a proxy measure of birth weight in Muhimbili National Hospital Dar-es-salaam Tanzania**

**Authors:** Nouzhat Salim Abdallah, Dr Edward Kija, Prof Karim Manji, Dr Helga Naburi

**Affiliation:** Paediatrics and child health

**Background:** A significant number of babies born in Tanzania and other low and middle income countries are born at home or at a low level health center where there is no access to scales to identify LBW. A rapid evaluation of newborns suffering with low birth weight by using other anthropometric measurements will help to provide adequate and appropriate care which can reduce neonatal mortality and other postnatal complications.

**Aim:** The main objective of this study was to determine the correlation of chest circumference, occipito frontal circumference, foot length and mid upper arm circumference with birth weight. Furthermore, determine the most sensitive and specific cut-off values

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**Methodology:** A hospital based cross sectional study was carried out, and all newborns admitted within 24 hours of birth at the neonatal unit at Muhimbili National Hospital were enrolled in the study. Convenient sampling was used to enroll the newborns. A total of 471 newborn babies were assessed for the chest circumference (CHC), occipito frontal circumference (OFC), foot length (FL), mid upper arm circumference (MUAC) and birth weight (BW). Data entry was done in IBM SPSS version 23 and Pearson's correlation coefficient was used to determine the correlation between these anthropometric measures with the birth weight. Receiver operating curve is used to determine the optimal cutoff point for each anthropometric measurement was chosen as the one with the highest ([sensitivity + specificity] /2).

**Results:** Out of 471 newborns studied, majority (52.2%) were female. The mean birth weight was 2639g with a standard deviation (SD) of 851, 203(43.1%) newborns were LBW. Significant positive correlation of 0.90 was found between CHC and BW ( $p < 0.01$ ) followed by OFC with positive correlation of 0.82 ( $p < 0.01$ ). By ROC-AUC analyses, CHC (AUC = 0.97, 95% CI 0.97 to 0.98) and OFC (AUC = 0.94, 95% CI 0.92 to 0.96) were identified as the optimal surrogate indicator of LBW babies. The optimal cut-off points for chest circumference  $\leq 29.45$  and head circumference  $\leq 32.9$ cm.

**Conclusion:** CHC and OFC can be used as predictors for LBW, and CHC was more appropriate than OFC as predictor of low birth weight among neonates at Muhimbili National Hospital.

**Recommendations:** We recommend to use CHC and/or OFC to identify LBW in areas where weighing machines are not available so as to refer neonates timely in order to reduce mortality. Further studies to test the validity and reliability of CHC and OFC measurements as proxy of identifying LBW babies in community settings in Tanzania are recommended

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**Knowledge, attitude, and practice on cervical cancer screening among women living with HIV in Kilimanjaro region, northern Tanzania**

**Authors:** Faustini C. Kimondo, Happiness D. Kajoka, Meshack R. Mwantake, Caroline Amour, Innocent B. Mboya

**Affiliation:** Community Health Department, Institute of Public Health, Kilimanjaro Christian Medical University College, P. O. Box 2240, Moshi-Tanzania, Department of Epidemiology and Biostatistics, Institute of Public Health, Kilimanjaro Christian Medical University

**Background:** Cervical cancer is a public health concern being the fourth most common cancer in the world among women in both incidence and mortality. Women living with HIV are disproportionately at a higher risk of developing the disease. Knowledge and attitudes towards cervical cancer screening are crucial in determining the uptake of screening intervention among the eligible women. We aimed to determine knowledge, attitude and practice of cervical cancer screening among women living with HIV in the Kilimanjaro region, northern Tanzania, following the integration of these services in routine HIV care in the country.

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**Aim:** We aimed to determine knowledge, attitude and practice of cervical cancer screening among women living with HIV in the Kilimanjaro region, northern Tanzania, following the integration of these services in routine HIV care in the country.

**Methodology:** A cross-sectional study was conducted in the Kilimanjaro region among 297 women living with HIV attending care and treatment centers (CTC) in Hai district and Mawenzi regional hospitals in northern Tanzania. A systematic random sampling technique was used to select study participants. Face to face interviews was used to collect data using a questionnaire. Data were analyzed using SPSS version 20.0. Frequencies and percentages summarized categorical variables and numerical variables summarized using mean/median with standard deviations/ interquartile range (IQR).

**Results:** About half (50.2%) of 297 women in this study had ever screened for cervical cancer. Of these, 64% screened within the past 12 months preceding the interviews. Ninety percent of all study participants had ever heard of cervical cancer screening, but only a fifth (20.5%) knew when women living with HIV should start screening. About half (52.5%) had adequate knowledge on the prevention, 38.4% on risk factors, and 27.9% on signs and symptoms of cervical cancer. Two-thirds (66.7%) of all the women had a positive attitude towards cervical cancer screening. The major source of cervical cancer screening information was the health care providers (80.1%) and mass media (66%), especially radio.

**Conclusion:** The women living with HIV in this study had inadequate knowledge, but favorable attitudes towards cervical cancer screening, while half of all women had screened for cervical cancer.

**Recommendations:** Efforts should be directed to capacity building of health care workers at CTC and scaling up the mass media as relevant interventions to promote the uptake of cervical cancer screening programs among women living with HIV in Tanzania.

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**Controlling NCDs through effective tobacco control in Tanzania**

**Authors:** Lutgard Kagaruki

**Institution:** Tanzania Tobacco Control Forum (TTCF)

**Background:** Tobacco is a common risk factor for the major non-communicable diseases (NCDs) namely cancer, cardiovascular disease, diabetes and chronic respiratory disease. In Tanzania, NCDs account for 27% of all deaths. Globally, tobacco kills 8m people, 7m from direct tobacco smoke and 1.2m non-smokers exposed to tobacco smoke. In Tanzania, tobacco kills 14,700 annually. Realising that tobacco was a global pandemic, WHO developed the Framework Convention on Tobacco Control (FCTC), an evidence-based treaty that reaffirms the right of all people to the highest standard of health. Tanzania ratified the Convention in 2007 but is yet to implement it. In order to control NCDs effectively, Tanzania should enact a tobacco control law that conforms to the WHO FCTC as soon as possible.

**Objective:** To explore the health, economic, environmental and social hazards of tobacco in Tanzania, to support a case for full implementation of the WHO FCTC.

**Results:** Tanzania has the Tobacco Products (Regulation) Act, 2003 (TPRA, 2003); Tanzania ratified the WHO FCTC in April 2007 and, Tanzania has the Tobacco Products Regulations, 2014. Both TPRA (2003) and the Tobacco Products Regulations, 2014 are ineffective in

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controlling tobacco and, hence NCDs in Tanzania, TPRA (2003) which was enacted before the Convention came into force, is flawed and has given a leeway to the tobacco industry to violate the FCTC. After FCTC ratification, the law was reviewed and, it was proposed that a new one be prepared to be in line with the Convention; this law was to be in place in 2009, to-date, more than 10 years, it is yet to be enacted. The Tobacco Products Regulations, 2014 were derived from the flawed TPRA (2003), they are also ineffective. Tanzania remains the only country within East Africa, including Zanzibar that has no FCTC compliant law. A new law, in line with the Convention is therefore imperative.

**Conclusions and Recommendations:** To be able to control tobacco and, hence, NCDs effectively, it is recommended that, Tanzania fully implements the WHO FCTC, by tabling in parliament the proposed tobacco control bill, which is in line with the requirements of the Convention

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**Theme: Innovation And Technologies****MoyoApp, the future of cardiovascular diseases prevention and control**

**Authors:** Alfateresia Peter Mwasangama, Faustine C Kessy.

**Institution:** Muhimbili University of Health and allied sciences

**Background:** The burden of non-communicable disease (NCD) has been increasing, and significantly contributes to high mortality and morbidity rates worldwide. In Tanzania NCDs account for more than 30% of all diseases and about 34% of Mortality. In 2025, NCDs will be contributing to 55% of mortality in Africa. A rapid rise of this burden has been documented recently in Tanzania and there is a high prevalence of hypertension and diabetes mellitus in both rural and urban areas. Currently the economy of our country cannot offer free treatment to all patients and people at high risk thus the best approach is not to invest in cure but rather in prevention and control. We have come up with MoyoApp a mobile application that will significantly reduce number of new cases of cardiovascular diseases and control of existing cases.

**Aim:** To determine the utility of MoyoApp for control of cardiovascular diseases

**Methodology:** MoyoApp is a mobile application for individual health data storage and health education promotion that uses artificial intelligence to predict the chances of occurrence of cardiovascular diseases. The idea of MoyoApp was brought up by a group of MUHAS students during the Win and learns hackathon 2020 through group discussion and in depth learning non-communicable diseases in Tanzania. MoyoApp will be accessible to all smartphone users, believing that most of these people are in urban areas and are the ones most affected by the modifiable risk factors for cardiovascular diseases CVDs and with time, the app will be accessible to non-smartphone users through USSD. Our target market is people aged above 25years as it is around this age when people are highly affected with the modifiable risk factors. The early adopters will be people with white collar jobs and the pilot area is Dar-es-Salaam. MoyoApp offers Health education concerning modifiable risk factors

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and nutritional advice and ways to avoid risk factors in both English and Swahili through videos and well written articles in a simple and easy to understand.

MoyoApp will facilitate early pick up of cases through regular data recording as one visits a hospital or even at home. It involves the recording of various health data, from simple ones like blood pressure, blood sugar level, height and weight to complex ones like lipid profile. The data will be interpreted and analysed artificial intelligence through known WHO calculators and presented in a line chart form to show the progress. An individual will be alerted on when the BMI and whether it is too high or low, or when the blood pressure is high or too low and likewise for blood sugar and will be given advice on what to do immediately at the click of a button also when to be more careful and when to see a physician. MoyoApp will also help locate patients to the nearby specialists and hospital facilities and through notifications, an individual will be reminded on the time to take medication and dates of appointment with their specialist thus facilitating control of existing cases of cardiovascular diseases.

**Results:** MoyoApp is now in a working prototype stage and has so far passed the initial ideation stage and will work through monthly subscription of 3000tsh and if we are likely to receive funds from stake holders will start operating in Dar es salaam by early January 2021 and the whole of Tanzania in April 2021 after final completion of the mobile app. The primary target market is all smartphone users and mostly youth from the age of 25 years and all people working in white collar jobs since they are the ones leading in a sedentary lifestyle in both rural and urban areas.

**Conclusion:** MoyoApp is expected to be much more effective to prevent a 20% increase by 2030(Raphael DM, et al 2018) if it will receive maximum support from stakeholders in terms of ideas and funds. Support MoyoApp to help fellow Tanzanians.

**Recommendations:** Although the government has drafted action plans to fight NCDs, there is still plenty of room for improvement, especially with regards to prevention, early detection and control of NCDs. We believe that young people, and especially health students, should be able to make valuable contributions by the application of technology to aid in prevention, early detection, control, treatment and management of these diseases. Furthermore, advocacy efforts should be directed towards improvement of people suffering from NCDs quality of life, their recovery and rehabilitation towards living full and healthy life. This will ensure the sustainability of the efforts leading towards full of a person.

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**Digitalizing NCD and health information into understandable and entertaining way to educate society.**

**Authors:** AFYATOON

**Institution:** Muhimbili University of Health and Allied Sciences

**Presenting Author:** Gloria Charles Mlagwa

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**Background:** AFYATOON company is a group of digital visual animations developers aimed at digitalizing health content and delivering it to the Target population; the adolescents, in the most convenient ways, the basic being visual animation, to foster massive awareness on different health issues. It was established in Dec 2017 as AMKA KIJANA, and early in 2018 it assumed its current name to cover more aspects of the health sector to respond to troubling statistics such as non-communicable diseases (NCDs) being reported to contribute significantly to morbidity and mortality worldwide. In year 2017 it was estimated that, of the 57.8 million deaths worldwide, 71% (41 million) were due to NCDs.

**Aim:** AfyaToon's objective is to digitalize health content and delivering vast and wide health information in the simplest ways in an educative and entertaining manner. Our content cover issues ranging from primary to tertiary prevention, addresses myth and facts around health; aiming to increase awareness around these health issues.

**Methodology:** AFYATOON uses visual art technology including 2D and 3D animations, motion graphic and posters to digitalize health content, presenting it in a story based way to educate and still entertain the recipient through social media platforms and hospital waiting areas. In its recent project; Afyacomix originating from the words afya and comics, it uses comics as a mainstay tool for presenting health information in a story based and entertaining way.

**Results:** Through online projects; one being Hold my hand (Oct 2019), it reached up to 1200 youth raising awareness on early detection of depression so that people going through it can be pointed towards the proper resources as soon as possible. Afyacomix (since May 2020); its recent project has created up to 15 online comics and comic animations in key areas of cardiovascular, respiratory and diabetes and dental diseases. Afyacomix's recent involvement was in the world sickle cell commemoration in the month of July 2020, where it advocated on the information on sickle cell disease, which was showcased through AfyaToon online platforms in association with other Sickle cell, based organizations, health promotion sector under ministry of health and other media including Mwananchi newspaper.

**Conclusion:** Simplicity in terms of content and manner of presentation of health information using visual arts has proved to be a key component contributing to an increased awareness on health issues in the community.

**Recommendations:** Integrating the AfyaToon's visual arts into hospitals TV screens in hospital waiting areas would help raise awareness amongst patients and relatives greatly visiting these waiting areas seeking treatment or escorting loved ones.

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**Development of a web-based application with a GFR calculator to assist renal dosage regimen adjustment.**

**Authors:** Castory Munishi

**Affiliation:** School of Pharmacy, Muhimbili University of Health and Allied Sciences

**Background:** The developed web application should be validated and adopted into clinical settings. A Tanzanian dose adjustment for patients with renal impairment should be

**OPEN ACCESS JOURNAL**

developed. Clinicians should receive trainings and sensitization programs in managing patients with renal impairment

**Objectives/Aims:** To determine appropriateness of dosage adjustment for patients with renal impairment at Muhimbili National Hospital (MNH) and to develop a web-based application with a GFR calculator to assist in dosage regimen adjustment.

**Project plan:** The developed web application should be validated and adopted into clinical settings. A Tanzanian dose adjustment for patients with renal impairment should be developed. Clinicians should receive trainings and sensitization programs in managing patients with renal impairment

**Progress:** The developed web application should be validated and adopted into clinical settings. A Tanzanian dose adjustment for patients with renal impairment should be developed. Clinicians should receive trainings and sensitization programs in managing patients with renal impairment

**Lessons learned:** The developed web application should be validated and adopted into clinical settings. A Tanzanian dose adjustment for patients with renal impairment should be developed. Clinicians should receive trainings and sensitization programs in managing patients with renal impairment

**Recommendations:** The developed web application should be validated and adopted into clinical settings. A Tanzanian dose adjustment for patients with renal impairment should be developed. Clinicians should receive trainings and sensitization programs in managing patients with renal impairment

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**Saratani Afya Check**

**Authors:** Hussein Mti, Belinda Anselmi Laizer, Carolyne Kerubo Omboto, Abdul Mwasumbi

**Institution:** Muhimbili University of Health and Allied Sciences

**Background:** Cervical cancer is the leading cause of cancer-related morbidity and mortality in women in sub-Saharan countries and is among the top ten cancers in Tanzania. Tanzania is ranked second among the countries with high incidence rate of cervical cancer with the Age Standardized Incidence Rate of 54.9/100,000. Nearly 9772 are diagnosed with cervical cancer and 6695 women die each year from the disease due to late detection and lack of resources

**Aim:** Increasing number of women with early cervical cancer detection; increasing awareness to community on cervical cancer; increase awareness to women on the early signs and symptoms of cervical cancer.

**Methodology:** We planned to operate the Swahili web-based application which will enable to collect data of women who are at the age of screening and redirect them to the nearest screening centre or treatment centre for screening and early detection of cervical cancer. This web-based application will also be connected to the specialists whereby a client, i.e., a woman browsing through this website, will choose any of the available specialists and

**OPEN ACCESS JOURNAL**

contact him or her for the screening and treatment plan. The websites will have a number of questions with the scores and will redirect those with a high score to the screening or treatment center of their choice."

**Results:** We are expecting the following results after putting our ideas into practice.

- a) To have updates on the location of Cervical Cancer Screening Camps.
- b) To understand the early signs and symptoms of cervical cancer and prevent the late diagnosis of Cervical Cancer as well as reducing the number of death due to cervical cancer late detection.
- c) Understand and choose the means of screening i.e. attending the Screening Camps or attending specialized clinics for Screening and further diagnosis.
- d) Have the data of the clients' visits who have completed the Vaccination Session (HPV Vaccination) and those who are not.
- e) Understand the distribution of cases (Prevalence of Disease) among the urban and rural communities who had the access to internet and website.

**Conclusion:** We believe our web platform will increase cervical cancer awareness and subsequent screening, thereby reducing associated mortality.

**Recommendations:** Our website will be the only immediate solution to the increasing number of women persuaded to take tests for cervical cancer and decrease the number of women with late detection.

**List Of Posters Presentations**

Poster No.	Title	Author Et Al
01	Magnitude, clinical characteristics and short term outcomes of stroke mimics in patients clinically diagnosed with a stroke	Sarah Matuja
02	The Prevalence of Hypertensive Heart Disease in A Tertiary Hospital in Tanzania: An Echocardiographic Registry Study	Henry Mayala
03	Renal Dysfunction among HIV-infected Patients on Anti-Retroviral Therapy in Dar es Salaam, Tanzania: A cross-sectional study.	Oswin Mwemezi
04	Proportion and associated factors of insulin resistance and Type 2 Diabetes Mellitus among individuals with hepatitis b as an indicator of hepatogenous diabetes	Thuraiya Hashim
05	Prevalence of malnutrition inflammation complex syndrome among patients on maintenance hemodialysis at Muhimbili National Hospital in Tanzania	Puneet Bramania
06	Platelet count to spleen diameter ratio as predictor of oesophageal varices in cirrhotic patients, MNH-Tanzania.	Bakari Gillah
07	Persistent burden of anemia among women of	Bruno Sunguya

**OPEN ACCESS JOURNAL**

	reproductive age in Tanzania: Results from the Demographic and Healthy Surveys	
08	Association between dietary diversity with overweight and obesity among adults in pastoral communities in Monduli District, Arusha region in Tanzania	Ahmed Khamis
09	Prevalence and factors associated with hepatitis b infection in the general population: a cross-sectional study in Moshi municipality, North-Eastern, Tanzania	Elichilia Shao
10	Translating a sub-Saharan African countries' experience in Human papillomavirus vaccination to a single dose regimen.	Onesmo Mwegoha
11	Prevalence, types and associated factors for subclinical rheumatic heart disease among primary school children in dar es salaam, Tanzania	Parvina Kazahura
12	Effectiveness of a Community-Based Training Intervention Targeting Mothers' knowledge, Attitude, and Associated Households' Awareness towards Salt Intake Reduction to prevent Hypertension in Dodoma	Gitinkwi Marwa
13	Efficacy of premarital genotype screening and counselling on knowledge and attitude toward Sickle Cell disease among university students in Dodoma Tanzania: uncontrolled quasi-experimental study	Arnold Lumbe
14	Phenotypic differences in systemic and mucosal T-cell populations and the effect of HPV and HIV infection on the T-cell composition in the cervix	Wilbert Mbuya
15	Evaluation of self-care practices and management of people with type two diabetes mellitus	Amon Mkeni
16	Assessing Self-care Practices, Lifestyle Behaviors and Cost Evaluation among Adults Attending Hypertension Clinics in Selected Hospitals in Tanzania	Joseph Shilole
17	Assessing governance of social health protection strategies and policies on non-communicable diseases in Tanzania	Kassimu Tani
18	Controlled blood pressure and its association with level of knowledge and practices among hypertensive patients attending clinic at Muhimbili National Hospital, Dar es salaam	Zeyana Adeyum
19	Factors contributing to delays between symptom onset and first diagnostic imaging among breast cancer patients in Tanzania.	Lulu Sakafu
20	Clinical audit of acute asthma management at the Emergency Medicine Department of Muhimbili National Hospital	Mwanaada Kilima
21	The Economic Burden of Non-Communicable Diseases Attributable to Obesity in Tanzania: Findings from Fiscal Policies on Sugar-Sweetened Beverages Research	Jires Tunguhole

**OPEN ACCESS JOURNAL**

	Project	
22	Facilitators and Barriers to Accessing Cancer Care in Tanzania: Patients' Perspectives and Recommendations	Fortunata Makene
23	Assessment of inhaler adherence and factors associated with non adherence among asthmatic patients at Muhimbili National Hospital	Mwanaada Kilima
24	Prevalence, awareness, treatment and control of hypertension among adults: results from community-based survey in Morogoro, Tanzania	Alfa Muhihi
25	Are health system protocols blockers of services access? Tanzania Elders experience in accessing NCD treatment	Joshua Edward
26	Reliability of visual assessment for diagnosis of Neonatal Jaundice among neonates of black descent: A cross sectional study from Tanzania.	Ikunda Dionis
27	Prevalence of Human Immunodeficiency Virus, Clinical Presentation and Related Factors among Adult Patients with Heart Failure at Jakaya Kikwete Cardiac Institute-Dar Es Salaam, Tanzania	Rweyemamu SJ
28	Prevalence of Cardiovascular Disease and Risk Factors among Residents of Tanga City	Rweyemamu SJ
29	Heterotaxy syndrome with an isolated levocardia in congenital heart diseases; A rare case combination in Tanzania	Theophylly Mushi
30	Quality of life and its associated factors among patients with cardiac implantable electronic devices implanted at jakaya kikwete cardiac institute	Jovina Nkya
31	The risk of developing Cardiovascular events among Adults living in Lake Zone Region, Tanzania	Irene Mukerebe
32	Integrated hypertension and diabetes mellitus type II treatment and care among people living with HIV/AIDS attending care and treatment center in Dar es salaam, Tanzania	Atuganile Musyani
33	Prevalence Role of dietary quality and diversity on overweight and obesity among women of reproductive age in Tanzania	Heavenlight Paulo
34	Assessment of comorbidities and risk factors among adult pulmonary tuberculosis patients in Mbeya Tanzania	Ombeni Chimbe
35	Prevalence of non-communicable diseases among individuals with HIV infection by antiretroviral therapy status in Dar es Salaam	Basil Tumaini
36	The Seven Safe Staircase Exercise (3SE); a manual for psychosocial narrative therapy for NCDs and other chronic illness patients	Elvis Miti
37	The escalating trauma-related morbidity and mortality in Tanzania is it an opportune move to trickle down services to Primary Health Care?	William Mgisha

**OPEN ACCESS JOURNAL**

38	Pattern,distribution and outcome of otorhinolaryngological conditions at Emergency Department, Muhimbili National Hospital	Irene Adabu
39	Long-term outcomes following first ever stroke in Tanzania	Kezia Tessua
40	Previous negative experiences and other perceived barriers towards tooth-retaining treatment among adult dental patients, Tanzania	Nyamuryekung'e K
41	The current study aimed to assess the level of the council management team, facility readiness, and health provider's competences use the Katavi region as a case in Tanzania	Medard Nguma
42	Early outcome of preterm neonates with respiratory distress syndrome admitted at Muhimbili National Hospital, Dar es salaam, Tanzania.	Maria Bulimba
43	Rehabilitation Care for Older People: Better Practices from Non-Government Organizations	Grace Saria
44	Clinical characteristics and healthcare received among diabetes patients attending healthcare facilities in Mwanza, Tanzania	Mariam Munyogwa
45	Gender differences in prevalence and predictors of visceral obesity among adults in a selected central region, Tanzania	Mariam Munyogwa
46	Intraoperativeradiotherapy, enhancement of screening and surgery of breast will reduce the burden of cancer patients.	Jumaa Kisukari,
47	Incidence and predictors of ejaculatory disorders following trans-urethral	Frank. A. Jongo
48	Success rate and early complications among patients with advanced esophageal cancer after stent placement at Muhimbili National Hospital	Amin A
49	Profile and Outcome of Patients Presenting With Acute Heart Failure in Emergency Medicine Department of Muhimbili National Hospital.	Rwegoshora SS
50	Burden of Non-communicable Disease and need for Primary Prevention and control of NCDs in the lake zone.	Rukamba AC
51	MoyoApp, the future of cardiovascular diseases prevention and control	Faustine C Kessy.
52	A case series of psychological disturbances following implantation of cardiac devices: Experience from Jakaya Kikwete Cardiac Institute.	Pedro Pallangyo
53	Obesity epidemic in urban Tanzania: a public health calamity in an already overwhelmed and fragmented health system	Pedro Pallangyo
54	Knowledge of cardiovascular risk factors among	Nsajigwa

**OPEN ACCESS JOURNAL**

	caretakers of outpatients attending a tertiary cardiovascular center in Tanzania: a cross-sectional survey.	Misidai
55	Burden, pattern and correlates of NCDs risk factors among relatives of patients with cardiovascular diseases: A cross-sectional study	Pedro Pallangyo
56	Challenges faced by nurses caring for children with palliative care needs in pasada, Dar es salaam, Tanzania	Malichewe C
57	An introduction course in palliative care – partnership approach	Malichewe C
58	Agreement between careHPV and Hybrid capture 2 (HC2) in detecting high-risk HPV in women in Tanzania	Johnson Katanga
59	Class II Malocclusion Treatment, Using the Modified Twin Block Appliance before Coordinated with Fixed Orthodontics in 11 years Patient	Mafele Ihoyelo
60	Management practices of esophageal cancer patients at Muhimbili National Hospital	Rebeca Majige
61	Public Awareness and Perceptions of Radiotherapy and Their Influence on the Use of Radiotherapy in Dar es Salaam, Tanzania	Geofrey Soko
62	Prevalence and Indications of Long-term Indwelling Urinary Catheter among Outpatients attending Urology Clinic at a Tertiary Hospital in Northwestern Tanzania	Asteria Ndomba
63	Assessment of the readiness of health facilities to provide outpatient management of non-communicable diseases using a nationally-representative sample of health facilities from Tanzania as an example of low-resource countries	Bintabara D
64	Analysis of Chest Radiographic Findings on Patients with Cervical Cancer at Ocean Road Cancer Institute.	Latifa Rajab
65	The role of mobile health application technology on restructuring lifestyle.	Sang'udi Sang'udi
66	Evaluation of the effectiveness of a theory-driven implementation strategy on facilitating uptake of guideline-based practice at ORCI using a within-site, pre-post design focused on BC care	Mvungi N
67	The Sickle Pan-African Research Consortium (SPARCO): delivering improved research capacity in Sickle Cell Disease in Tanzania	Agnes Jonathan
68	Integrating HIV, diabetes and hypertension services in Africa: study protocol for a cluster-randomised trial in Tanzania and Uganda.	Sayoki Mfinanga
69	Clinical profile of patients with colorectal cancer attended Muhimbili National Hospital	Ally Mwangi
70	Assessing the attitude and practice of clinical staff in using morphine as a treatment of cancer pain at ORCI	Mary Haule

**OPEN ACCESS JOURNAL**

71	Determining Out of Pocket Costs for Medical care of Injured patients presenting to Emergency Medicine Department - Muhimbili National Hospital	Masuma Gulamhussein
72	Early childhood dental caries, risk factors and anthropometric measures among 3-5-year-old preschool children in Kisarawe-Tanzania.	Tumaini S. Ndekero
73	Outcome of physical tracing for participant retention: a case of the 2h study in Mbeya, Tanzania.	Tausi Sade
74	Cervical Cancer: Time of diagnosis and access to care among women in Mbeya region, Tanzania.	Ruby Mcharo
75	Validation of Clinical Risk Scores for Type 2 Diabetes Mellitus in Tanzania	Lucy Mrema
76	Clinical profile and treatment outcome of vulvar cancer patients: A retrospective study from a tertiary Hospital	Irene Nguma
77	Identifying the most effective treatment strategies to control arterial hypertension in sub-Saharan Africa: a randomized controlled trial	Herry Mapesi
78	Prevalence of Cardiovascular Diseases, Risk and associated factors among patients attending Songea Regional Referral Hospital	Rweyemamu SJ
79	Baseline evaluation of bioinformatics capacity in Tanzania	Raphael Sangeda
80	Short term clinical outcomes of treatment among patients with oesophageal cancer treated at Ocean Road Cancer Institute, Dar es salaam, Tanzania.	Mamsau Ngoma
81	Integrated hypertension and diabetes mellitus type ii treatment and care among people living with hiv/aids attending care and treatment center in dar es salaam, tanzania in 2020: a health facility based study	Atuganile Musyani
82	Impact of COVID-19 pandemic to enrollment of Sickle Cell patients in SPARCO database.	Daniel Kandonga
83	Blood Transfusion for Sickle cell disease patients attending Temeke Regional Referral Hospital in Tanzania	William Lloyd
84	High Blood Pressure and 24-Hour Ambulatory Blood Pressure Monitoring in Tanzanian Adolescents: A Cohort Study	Mussa K. Nsanya
85	The need for capacity building in ethics of cancer care and research	Nazima Dharsee
86	Disabilities contribute to poor academic performance among primary and secondary school scholars: A case study from three districts in Rukwa region, Tanzania	G.B.Kagaruki
87	Exploration of information needs for cervical cancer patients undergoing treatment at ocean road cancer institute Dar es salaam Tanzania.	Ishengoma Margaret
88	Diabetes prevalence by HbA1c and oral glucose	Kidola Jeremiah

**OPEN ACCESS JOURNAL**

	tolerance test among HIV-infected and uninfected Tanzanian adults	
89	Tumaini La Maisha Project	Patricia Scanlan
90	Isolation, Quantification and Cryopreservation of CD34 Positive Cells from Cord Blood – Methods Validation in Tanzania	
91	Hematopoietic stem cell transplant for patients with SCD: Establishing pre-transplant care in Tanzania	Fredrick Luoga,
92	Effectiveness of cervical cancer screening on stage and outcome of treatment among women attended at ocean road cancer institute Dar es salaam, Tanzania	Magreth Paul
93	Sickle Cell Disease Genomics Network of Africa	Josephine Mgaya
94	Cardiac Catheterisation in children with Heart Diseases in Tanzania: Success and Challenges. A case of Jakaya Kikwete Cardiac Institute (JKCI)	Deogratias Nkya
95	Prevalence and associated factors for myocardial infarction among patients admitted at Jakaya Kikwete Cardiac Institute from 2017- 2019	Fidelis Felsian
96	To determine the 5 years overall survival rate and factors associated with survival of laryngeal cancer patients treated at Ocean Road Cancer Institute from 2008 -2012.	Emmanuel Lugina
97	Obesity taking lead on non-communicable diseases screening; TAMSA findings	Rashid Mdaki
98	Mass screening program for Sickle cell disease in Tanzania, January to September 2020	William Lloyd
99	Microbiome Research for Health and Disease: Where are we in Tanzania?	Kilaza S Mwaikono
100	Exposure to outdoor fine particulate matter and lung function status of adults in Mbeya city, Tanzania	Julieth Lalashowi
101	To determine the predictors and outcome of cardiac arrest in paediatric patients presenting to Emergency Medicine Department of Muhimbili National Hospital in Tanzania.	Amne Yusuph
102	Role of Technology in Continuation for Chronic Disease Care	Elvis Silayo
103	To determine clinical pathological profile of laryngeal cancer patients treated and at Ocean Road Cancer Institute from 2008 -2012 and their overall survival rate	Emmanuel Lugina
104	Cervical Cancer Knowledge among Medical Doctors and Clinical Officers in Dar es salaam	Stephen Sanga
105	Diagnosing lymphoma in East Africa: comparison of conventional pathology with digital scans and liquid biopsies	Faraja Chiwanga
106	Validation of a next generation sequencing panel for detection of EBV lymphoma in sub-Saharan Africa	Emmanuel Josephat

**OPEN ACCESS JOURNAL**

107	Continued provision of essential maternal health services during COVID-19 pandemic using a digital health application	Alice Timbrell
108	Barriers and facilitators to clinic attendance and hypertension medication adherence among adults with hypertensive urgency.	Godfrey A. Kisigo
109	Rare diseases in Tanzania: A National call for action to address policy and urgent needs for improved lives of affected individuals of Rare Diseases (RDs) and their families.	Frida Kaywanga
110	Non-communicable diseases in older people: the unsolved paradox that calls for urgent attention of all actors.	Frank Manase
111	Assessing perception on feasibility and acceptability of pharmacist intervention at Muhimbili National Hospital; A post deployment survey	Charity Alphonse
112	Medication adherence and associated factors among hypertensive patients attending Jakaya Kikwete Cardiac Institute.	Pedro Pallangyo
113	Prospective study on cisplatin toxicities among cancer patients at Ocean Road Cancer institute from september 2018- may 2019	Nanzoke Mvungi
114	Healthcare Providers Experience and Knowledge on Nutritional Care among Cancer Patients	Kandali Kapie
115	Community perception of NCDs' risk factors surveillance using mobile phone surveys and their validity, Tanzania.	John William
116	Knowledge, Attitude and Awareness of the Society about Medical Radiation in Tanzania	Stephen Mkoloma
117	The effect of hydroxyurea treatment on haemolysis in patients with sickle cell disease in Dar es Salaam, Tanzania; A longitudinal study	Azra Gangji
118	Development of Recovery and Service Access Mobile and Web application for people with Drug Use Disorder in Tanga Municipality and Muheza District.	Castory G. Munishi
119	Experiences of caregivers when caring for terminally ill patients: the case of pasada's home based palliative care program, Dar es Salaam, Tanzania	Christina V. Malichewe
120	Patterns of Occupational Traumatic Upper Limb Injuries Managed at Muhimbili Orthopaedic Institute	Samih Issa
121	Estimating the prevalence and predictors of musculoskeletal disorders and arthritis in the Kilimanjaro region of Tanzania: A cross-sectional pilot study based on musculoskeletal system screening tools	Nateiya M Yongolo

**OPEN ACCESS JOURNAL**

122	Quit App-Smoking cessation App	Ida Mwesiga
123	The impact of sociodemographic factors and diet counseling in nutrition status, daily dietary intake of protein and total kilocalories, and laboratory values of Serum Albumin in patients undergoing hemodialysis in AHN supported HD units.	Zohra Lukmanji

**Note from Editors:** Full abstracts of the following presentations have not been included in the Proceedings because they were not consented for the same:

1. **Pedro Pallangyo**, Zabella Mkojera, Makrina Komba, Henry Mayala, Smita Bhalia, Happiness J. Swai, Nsajigwa Misidai, Jalack Millinga, Gudila Swai, Ziada Joram, Nancy Mallya, Mohamed Janabi. **Obstructive sleep apnea and excessive day-time sleepiness among hypertensive patients attending JKCI: A cross-sectional survey.**
2. **Omar N Lweno**, Christopher R Sudfeld, Ellen Hertzmark, Karim P Manji, Said Aboud, Ramadhani A Noor, Honorati Masanja, Nahya Salim, Setareh Shahab-Ferdows, Lindsay H Allen, and Wafaie W Fawzi. **Vitamin B12 is low in milk of early postpartum women in urban Tanzania, and was not significantly increased by high dose supplementation.**
3. **George PrayGod**, Suzanne Filteau, Nyagosya Range, Brenda Kitlya, Bazil B. Kavishe, Kaushik Ramaiya, Kidola Jeremiah, Andrea M. Rehman, John Chagalucha, Mette Frahm Olsen, Aase Benggaard Andersen, Henrik Friis, Rikke Krogh-Madsen Daniel Faurho.  **$\beta$ -cell dysfunction and insulin resistance in relation to prediabetes and diabetes among adults in north-western Tanzania: a cross-sectional study.**
4. **Nasser Ahlam**, Chamba Clara, Yonazi Mbonea, Hussein Ally, Mushi Rosemary, Schuh Anna, Luzzatto Lucio. **Molecular Response to Imatinib in Patients with Chronic Myeloid Leukaemia in Tanzania.**
5. **Pedro Pallangyo**, Henry Mayala, Smita Bhalia, Jalack Millinga, Deograsia Mgina, Nsajigwa Misidai, Makrina Komba, Zabella S. Mkojera, Happiness J. Swai, Tunzo Mcharo, Robert Yeyeye, Mohamed Janabi. **Dysglycemia and associated factors among Dar es Salaam residents: A population-based study.**
6. **Felix F. Mungulluh**, Paschal Ruggajo, Maryam Amour, Francis F. Furia. **Metabolic bone disease and its associated factors among patients with chronic kidney disease at Muhimbili National Hospital.**

**OPEN ACCESS JOURNAL**

7. **Mamsau Ngoma**, Susan Miesfeldt, Twalib Ngoma, Elia Mmbaga, Beatrice Mushi, Vikram Kumar and Habiba Mahuna. **mPalliative Care Link: Examination of a digital solution to palliative care coordination among Tanzanian cancer patients.**
8. **Asifiwe Makawa**, Mussa Ally, and Elingarami Sauli. **Machine Learning Approach Towards Improving Cardiovascular Health in Tanzania.**