UNIVERSITY OF ZIMBABWE

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ENRICH
ENHANCING NON-COMMUNICABLE DISEASES RESEARCH AND INNOVATION CAPACITY IN HARARE, ZIMBABWE

Training opportunities for Masters and PhD Fellowships (Cohort 1)

Enhancing Non-Communicable Disease Research and Innovation Capacity in Harare (**ENRICH**) is a program funded by the National Institutes of Health (NIH) at the University of Zimbabwe Faculty of Medicine and Health Sciences (UZFMHS) to address the burden of NCDs in Zimbabwe, as an emerging major cause of morbidity and mortality in sub-Saharan Africa. In Zimbabwe, there is a critical lack of competent and independent researchers to monitor the epidemiological changes in NCD risk factor pattern and morbidity. Monitoring these changes is critical for health service planners and requires well trained researchers to provide robust and credible data and statistics on trends for health care planning and policy making. The **ENRICH** program intends to address this challenge by implementing a research training programme whose major objectives are:

1) To mitigate the critical shortage of researchers in NCDs to address this emerging national priority health area in Zimbabwe.
2) As part of the training and capacity building, to conduct NCD mentored research projects.

The ENRICH program will be implemented by UZFMHS faculty in collaboration with faculty from local, regional and international partners such as African Institute of Biomedical Science and Technology (AiBST), University of the Witwatersrand, University of KwaZulu-Natal and University of Colorado Denver. The programme is inviting interested applicants to submit applications towards Masters, PhD and Post-doctoral fellowships. The fellowships which are FULL TIME, 2 years Masters and 3 years PhD starting in April 2022. Potential candidates must focus on the following specific **NCD areas**:

1. Frailty

Frailty is a distinct syndrome which affects the older population who become vulnerable to increased risk of hospitalization and dependency. Frailty is recognized as a major cause of morbidity and mortality in high income countries because of the pattern of age distribution. In Zimbabwe life expectancy has risen from 47 in 1971 to 61.7 in 2021 according to WHO estimates. Because of a rising population of over 65s, problems of frailty are expected to become a major cause of morbidity and mortality. There are no data on frailty in Zimbabwe. Available screening tools were all developed and validated in developed countries. WHO and the Global Burden of Disease reports suggest that frailty is an emerging major cause of morbidity and mortality facing LMICs like Zimbabwe.

Concept/Objective: To review the definition of frailty and the currently available screening tools, develop locally relevant frailty screening tool, validate its performance, and carry out a community frailty prevalence survey in Zimbabwe using the local tool.

Scientific Mentor**: Prof M Borok**
Level of Fellowship: PhD

2. Heart Failure and Dilated Cardiomyopathy

Dilated cardiomyopathy is a disorder of cardiac muscle resulting in ventricular dilatation and poor systolic function. It is one of the commonest causes of heart failure in Zimbabwe, second to hypertension. Although there are many causes of dilated cardiomyopathy, three phenotypes deserve special mention. These are postpartum cardiomyopathy (PPCM) which is unique to young childbearing black populations in sub-Sahara Africa who develop heart failure during the peripartum period. Many males and females consume alcohol around the world. The second phenotype, alcohol induced dilated cardiomyopathy develops in a

small but significant proportion of male alcohol drinkers. The third phenotype seen in Zimbabwe is that of post-menopausal women who do not drink alcohol, are not diabetic or hypertensive presenting in heart failure due to sporadic or idiopathic dilated cardiomyopathy. These three phenotypes both end up with heart failure with the same pathophysiological changes but due to different etiologies.

Concept/objective: To perform **GWAS** (Genome Wide Associations) study of these three common causes of heart failure using **H3Africa Chip** on the **IScan** genotyping system to determine if there is genetic association with any of these three phenotypes of dilated cardiomyopathy.

Scientific Mentors: **Prof C Masimirembwa**
Prof J Matenga
Level of Fellowship level: PhD

3. Atherosclerosis amongst Zimbabwean black population

Atherosclerosis is an inflammatory vascular process that precedes the major cardiovascular diseases like IHD, Stroke, and peripheral vascular disease. This process involves medium and large sized arteries starting as fatty streaks, accumulation of lipid laden foam cells in the intima of arteries. This leads to intima -media thickening. The process starts in childhood and with time, this evolves into fibrotic plagues. Erosion or rupture of the plaque is what may finally result in thrombotic occlusion of the artery leading to Ischemic myocardial complications, stroke, or peripheral vascular Ischemia. The development of atherosclerosis precedes the clinical disease by decades.
The emergence of CVD in LMIC like Zimbabwe suggests that the underlying process of atherosclerosis is underway in this population. There are no data on the preclinical/premorbid prevalence of atherosclerosis in our population.

Concept/Objective: Postmortem survey of atheroma amongst cases of sudden unexpected death and victims of traumatic deaths e.g., road traffic accidents.

Scientific Mentor: **Prof R Makunike**
Prof J A Matenga
Level of Fellowship: Masters Histopathology

4. Ultrasound carotid intimal thickness assessment to determine the prevalence and pattens of atherosclerosis amongst the neurodegenerative and stroke patients seen in the stroke unit.

Symptomatic cardiovascular diseases generally are a result of atherosclerosis progressing to the point of limiting blood flow to vital organs. Carotid intima-media thickening is the early stage in the development of atherosclerosis. This can be detected non-invasively by measuring carotid intima-media thickness using B-mode ultrasound. Identifying patients at risk of CVD is essential for applying evidence-based interventions to reduce morbidity and mortality.

Concept/Objective: To determine the presents of atherosclerosis amongst black Zimbabwean patients presenting with stroke or neurodegenerative diseases.

Scientific Mentor: **Dr Chatora**
Prof J A Matenga
Level of Fellowship: PhD

5. Demographic Health Survey

Demographic and NCD Health Survey

Zimbabwe like other low-income countries has been overburdened by communicable diseases and mother-child morbidity and mortality. With an HIV prevalence of 12.6% of adults and TB incidence of 603/100000, the focus of health planners and policy makers in the last two decades has been on the HIV pandemic and its complications. The Zimbabwe Demographic and Health Survey carried out periodically by the Ministry of Health and Child Care has tracked demographic and health indicators since 1988. The health indicators focused on HIV, clean water supply and sanitation, fertility and family planning and mother and child mortality while sociodemographic issues compared rural and urban populations.

Recent reports by GBD and WHO have highlighted the emergence of NCDs as major cause of morbidity and mortality in LMIC caused by changing lifestyles and increasing life expectancy. Life expectancy has risen from 47 in 1971 to 61.7 in 2021. Zimbabwe may be going through a significant epidemiological transition. The next census is April 2022. There are no current or contemporary data on NCD indicators or prevalence rates although the MOHCC has declared NCD as a priority area. The lack of current NCD prevalence data is partly due to lake of trained NCD researchers in the country.

Concept/Objective: To carry out a DHS focusing on NCD in clearly defined "rural" and "urban" population.

Scientific Mentor: **Prof S Rusakaniko**
Prof JA Matenga

Level of Fellowship: Masters

6. Dental, Craniofacial Anomalies and NCDs

Genetic risk factors for non-syndromic cleft lip with or without cleft palate (NSCL ±P) in a Zimbabwean population.

Non-syndromic cleft lip with or without cleft palate (NSCL ± P, is the most common orofacial birth defect, has a global prevalence ranging from 1:500 to 1: 2,500 live births, with considerable geographic and ethnic variation (Dixon et al. 2011;Borges *et al*. 2015).In Africa the prevalence is 0.67 per 1000 live births (Tollefson et al. 2015). NSCL ±Phas multifactorial aetiologic factors which include both genetic and environmental factors, and gene-environment interactions although these remain unclear. Genome wide studies (GWAS) including linkage analyses identified NSCL ± P) susceptible genetic markers in IRF6 as rs642961 (Rahimova et al 2008) and the rs987525 polymorphism at 8q24 (Birnbaum et al. 2009; Grant et al. 2009). These findings have been replicated (Park et a**l**.2011; Jugessur et al, 2008; Blanton et al. 2010 a.2010 b) and the contribution of combined genetic factors to NSCL±P estimated at 90% (Grosen et al.2011).

Concept/Objective: A case-control study to investigate the association of previously reported NSCL±P genetic risk variants in other populations in a black Zimbabwean population.

Scientific Mentor: **Prof M Chidzonga**

Level of Fellowship: Masters

7. Haematology

Title: Ready to use supplementary food paste for improving caloric intake and growth of children 6-60 months with SCD in Zimbabwe: Acceptability and Feasibility

Growth failure is a serious and important complication of SCD which must accompany the management of the complications SCD. Several macronutrient and micronutrient (minerals and vitamins) deficiencies have been reported in patients with SCD. The clear benefits of nutritional supplements in the management of SCD have been poorly translated into clinical care to improve outcomes. Ready to use supplementary food

(RUSF) paste is recommended by the WHO because of its reduced water content which inhibits bacterial growth. It can therefore be safely used in settings with reduced access to safe water supply in Africa.

Concept/Objective: In an implementation study, to assess acceptability and feasibility of macro- and micronutrient supplementation with RUSF in children with SCD.

Scientific Mentor: **Dr P Kuona**
Level of Fellowship: Masters

Eligibility Criteria

Masters Applicants must:

- Have a first degree in a relevant discipline in health or social sciences e.g. medicine, dentistry, public health, or social sciences (MBChB, BDS, MS).
- For MMeds, applicants should be in second or third year, ready to conduct a research project
- Have excellent academic records, and satisfy any additional requirements prescribed for admission to a specific program.
- Have identified the Master's degree they wish to pursue and demonstrate how the ENRICH training will support their future research aims.
- Must be registered or intending to register with the University of Zimbabwe
- Be committed to do a research study in one of the listed priority focus areas above.

PhD Applicants must:

- Have a Master's degree in a relevant discipline in health and social sciences, and/or an MMed degree.
- Have research or programmatic experience in NCDs or other related conditions.
- Have high academic merit and intellectual capacity to study successfully at the doctoral level.
- Show strong personal motivation to complete the programme within the stipulated fellowship timeframe.
- Have identified a research project from the four priority areas above with clear aims and achievable objectives.

Fellowship package

The ENRICH fellowship will cover the following:

- Tuition fees
- Support for research project and supervision
- Monthly stipend for protected research time
- Travel costs for agreed conferences and training workshops
- Other expenses essential for the proposed research project (e.g., materials, equipment, publication) will be considered

Additional information

- Candidates are required to work with indicated mentor to develop their concepts.
- Candidates are expected to register for their studies with the University of Zimbabwe for Masters and PhD.
- Candidates must complete the fellowship within the stipulated time frame.
- As a condition of the award, ENRICH stipulates that the candidate attend relevant specific workshops and/or short courses such as research methods provided by the program.

- *Involvement in an existing research program /project will be essential but not a requirement*. Please note that ENRICH may require additional information, over and above information supplied in the application, to reach a decision about the suitability of any candidate for the award of the fellowship.
- Female candidates are especially encouraged to apply.

Application requirements

1. A fully completed application form
2. A comprehensive maximum 5 page CV including relevant research and work experience
3. Certified transcripts and copies of post high school qualifications submitted as ONE pdf file.
4. Certified Copy of National ID or Passport
5. Two references (from the mentor and another academic) emailed directly to: Mr Antony Matsika on antony.matsika@gmail.com not later than one week following the application deadline below.

Requests for application forms and/or more information as well as contractual issues should be addressed to antony.matsika@gmail.com

Submit completed application to: Mr Antony Matsika on antony.matsika@gmail.com

Deadline for submission: **7 March 2022**