



**THE INTERNATIONAL CONFERENCE ON HEALTH
ADVANCES AND RESEARCH**

Monday 7th to Wednesday 9th November 2022

Nigerian Institute of Medical Research

Conference Proceedings Report

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Introduction

The Nigerian Institute of Medical Research (NIMR) is an institution under the Federal Ministry of Health with the responsibility of conducting research into diseases of public health importance in Nigeria. The institute organizes an annual international conference designed to enable researchers in the Nigeria, Africa, and also the global community be able to present and disseminate the results of their research. The conference this year was termed the 'International Conference on Health Advances and Research (CHAIR)' with the presentations distributed into the tracks of basic sciences, clinical sciences, public health, one health, and biomedical innovations.

Following the design of the 2021 conference, this year's conference was also a hybrid conference comprising both online and onsite attendance, with online attendance allowing participants from different diverse locations to attend the conference without the burden of travel and accommodation. As with every physical conference, onsite attendance allowed for networking and mingling opportunities.

In line with the tradition started at the 2021 conference, conference scholarships were given to postgraduate students all around Nigeria via a student scholarship endowment scheme. The Gold Scholarship was sponsored by the Aliko Dangote Foundation, and it covered preconference and conference registration, transportation, accommodation, and feeding for 28 students, while APIN Public Health Initiatives sponsored the Bronze Scholarship scheme which covered pre-conference and conference registration for 30 students.

There were several highlights in this year's conference. However, the main highlights of the conference were the pre-conference skills-building session, the keynote address by Professor Alani Sulaimon Akanmu, the Chair, of the National Task Team on ART, titled "The future of HIV/AIDS", the 10th Distinguished Lecture by Dr. Bamidele Iwalokun, titled "Exploring Biochemistry as the anatomy of life sciences for solving health challenges and building human capacity: My Odyssey", and several abstract, symposium and plenary sessions. Additionally, in the spirit of 'all work and no play this year's conference added a Community Village that included games, free health checks, interacting and networking, karaoke and dancing, and lots of fun and merriment.

This conference was attended by 188 registered participants (online-12, onsite- 176). Throughout the conference, priority was given to audience participation with active participation encouraged through structured discussions, questions, and networking sessions.

The participants, facilitators, speakers, and guests at the conference came from different institutions globally, which includes

- Nigerian Institute of Medical Research
- Osun State University
- The Federal University of Agriculture, Abeokuta, Ogun State
- Landmark University, Omu-Aran, Kwara State
- University of Calabar, Cross-River State
- University of Benin Teaching Hospital, Edo State
- Ladoke Akintola University of Technology, Ogbomoso, Oyo State
- Federal University of Technology, Akure, Ondo State
- University of Osun, Osun State
- Lead City University, Oyo State
- Chrisland University,
- Usman Danfodio University, Sokoto State
- University of Lagos, Akoka, Lagos
- University of Ilorin, Kwara State
- University of Jos, Plateau State
- Yaba College of Technology, Lagos State
- Godfrey Okoye University
- Eko University of Medicine and Health Sciences, Lagos State
- University of Ibadan, Oyo State
- Lagos State Ministry of Health
- National Primary Health Care Development Agency
- Federal Ministry of Health
- Federal Neuropsychiatric Hospital
- NIMR Foundation
- Dangote Foundation

The conference also accommodated registered exhibitors and sponsors which included research organizations and life science companies such as

- Thermo Fischer Scientific
- 54Gene
- APIN Public Health Initiatives
- HTDS – High Tech Detection Systems
- Peter and Jane Limited
- Philip Pharmaceuticals Nigeria Limited
- Unique Instruments and Science Company Limited
- Inqaba Biotec West Africa Ltd
- Neophoenix
- Lifesciences Synapse Technologies
- Fowm Biotechnology Limited
- Biologix Limited
- Several OPEN sponsors
 - Alstein
 - Nestle Nigeria PLC
 - Beloxxi Biscuits
 - DATs
 - Dansaki Imperial Multibiz Limited
 - Ranstojan

The Pre-conference Workshop

The pre-conference workshop covered four skill-building sessions designed to help participants garner relevant skills in molecular biology and the knowledge of relevant databases and statistical techniques that can help improve their research. The skill-building sessions were done concurrently with participants attending either one of the workshops. This year's pre-conference workshops included training on

1. Genotyping with Taqman Assays (Real-Time PCR QuantStudio 7 Flex)
2. Sanger Sequencing Workflow (Demonstration with HIV/DR Assay)
3. National Secondary Data Sources for the Nigerian HIV/AIDS program
4. mHealth Interventions to address HIV Care Continuum Needs for Youth Living with HIV.

Genotyping with Taqman Assays (Real-Time PCR QuantStudio 7 Flex)

The genotyping workshop was sponsored by Thermo Fisher Scientific Inc and facilitated by Dr. James Ayorinde. The training included information on laboratory ethics, conventional PCR, qPCR, its application, genotyping techniques, and TaqMan SNP genotyping.

Sanger Sequencing Workflow (Demonstration with HIV/DR Assay)

This skill-building workshop was sponsored by Thermo Fisher Scientific Inc and facilitated by Dr. M. Khasief Socker. The training covered nucleic acid using magnetic beads, tissue preservation, and nucleic acid quantification using Qubit.

National Secondary Data Sources for the Nigerian HIV/AIDS program

This skill-building workshop was sponsored and facilitated by the Public Health Information, Surveillance Solutions, and Systems (PHIS3). The training covered the introduction to the national Data Repository (NDR), its public dashboard and analytics review, the Nigeria HIV/AIDS Indicator and Impact Survey Analytics, the NDR analytics database, and the variables available in these databases for HIV/AIDS research.

mHealth Interventions to address HIV Care Continuum Needs for Youth Living with HIV.

The workshop on the use of the different mHealth Interventions to address HIV Care Continuum Needs for Youth Living with HIV was done by several facilitators including Dr. Aima Ahonkhai, Dr. Ucheoma Nwaozuru, Dr. Nadia Dowshen, Helen Audu, Dr. Martin Were, Ms. Ifeoma Idigbe, Dr. Zaidat Musa and Dr. Olaposi Olatoregun. The training centered on using qualitative research methods, the

use of the Peer Naija App, and leveraging mHealth strategies to address adherence challenges using the Peer Naija App.

Day 1

Abstract Session 1 - The Director-General's Young Scientist Contest

The conference was kick-started with the Director-General's Young Scientist Contest which is a contest carried out annually to encourage early-career researchers at the institute to get involved in research and disseminate their findings at the conference. About five top-scoring abstracts submitted by early-career researchers at NIMR are selected for this award.

Three researchers were shortlisted for the award this year. These researchers made a 10 minute presentation on their studies, followed by questions from the assessors and assessment by the assessors based on the quality of slides, scientific content, comportment, eloquence, appearance, relation of study to the conference theme, and response to panel's questions. The three shortlisted early-career researchers for the 2022 Director-General's Young Scientist Contest and their respective topics are

- **Abideen Salako:** Prevalence and Associated Risk Factors of Myocardial Ischaemia in Children Living with Sickle Cell Disease at a Tertiary Hospital in Lagos, Nigeria: A Comparative Cross-Sectional Study
- **Chioma Kunle-Ope:** Genetic Diversity and Drug Resistance of *Mycobacterium tuberculosis* complex isolates circulating in Lagos, Nigeria.
- **Olufemi Samuel Amoo:** Video Observed Therapy Device improves the probability of Tuberculosis Therapy adherence in Tuberculosis patients.

This year's Young Scientist Contest was assessed by Prof. Bolajoko Aina (University of Lagos, Nigeria), Prof. Aima Ahonkhai (Vanderbilt University, USA), Prof. S. Ladokun (Lead City University, Ibadan, Nigeria) and Prof. Kolawole Oyedeji (University of Lagos, Nigeria), and the result of this contest will be announced later during this closing ceremony.

Opening Ceremony

The opening ceremony started with introductions of the guests, followed by an opening remark by the Chair, Prof. I. F. Adewole, who welcomed all distinguished speakers and participants to the conference. He explained that the conference provided a platform for accessing biomedical research updates in Nigeria, and he commended NIMR for conducting translational research that is of high value and quality in the health sector in Nigeria.

The summit of the opening ceremony was the Keynote address titled “The future of HIV/AIDS”, by Professor Alani Sulaimon Akanmu, the Chair, of the National Task Team on ART. In his address, Prof. Akanmu identified that the future of HIV is to find a Cure for HIV infection. He mentioned that nucleases are needed to remove the virus from human cells without destroying other cells. He also mentioned that research is currently ongoing to find a cure for HIV infection, some of which have led to the discovery of Broadly neutralizing Antibodies (BNABs) that targets HIV on membranes of infected cells. He revealed that two individuals were cured of HIV after receiving cutting-edge stem cell transplants, however, replicating the procedure might be difficult but achievable. He concluded his address with the statement that the cure for HIV is achievable with more research.

Morning Session

The morning session comprised a concurrent abstract session covering a wide range of topics. Participants attended different abstract sessions based on their research interests. The different studies and the key recommendations from these studies are as follows.

Abstract Session 2

1. Health Research Mentorship in Low- and middle-income countries (HERMES): A TDR global practical guide to enhance research mentorship
Key Finding/Recommendation - Research mentorship should be scaled up and the HERMES guidelines are adopted to bring up-and-coming researchers into the mentorship cycle.
2. Low Frequency of non-falciparum malaria and PFCRT mutations in parasites circulating in Nnewi district, southeast Nigeria
Key Finding/Recommendation – There is a need for increased surveillance of non-plasmodium falciparum malaria in Southeast Nigeria.
3. Assessment of mitochondrial DNA damage in HIV- positive teenagers in southwest Nigeria
Key Finding/Recommendation - Mitochondrial copy no in HIV-positive adolescents was higher than HIV negative adolescents.

4. Bacteriological assessment of sliced vended watermelon in Ago- Iwoye metropolis

Key Finding/Recommendation – Isolation of pathogenic bacteria such as E.coli, Enterobacter spp, Staphylococcus spp, and Klebsiella spp from vended watermelon facilitates the need continues education on proper hygiene practices in food preparation for food vendors and handlers.

Abstract Session 3

1. Tracking the epidemiology of severe acute respiratory syndrome (SARS-CoV-2) in Lagos wastewater canals: Preliminary findings

Key Finding/Recommendation – The study highlights importance of wastewater-based epidemiology as an early warning system for virus surveillance.

2. Evaluation of mutation pattern in a gene associated with HbF Expression and clinical manifestation among Sickle cell disease patients in Ibadan South-west Nigeria

Key Finding/Recommendation - Facilities for early and regular quantification of foetal hemoglobin should be made available in sickle cell clinics and hospitals.

3. Community assessment of school-based mass drug administration program for soil-transmitted Helminths and Schistosomiasis

Key Finding/Recommendation – NTD health promotion and education messages should be incorporated into infant clinic programs for mothers.

4. Socioeconomic risk factors for cervical oncogenic human papillomavirus HPV infection among Nigerians

Key Finding/Recommendation – Efforts at cervical cancer prevention should address social behaviors, especially among younger women and health intervention and awareness of HPV infection among younger people especially those in tertiary institutions is strongly recommended.

5. Human Papillomavirus Genotype survey across North and South Nigeria: Preliminary findings

Key Finding/Recommendation - The presence of high-risk HPV was found at high rates in all surveyed states. The surveillance program needs to be sustained to ensure continuous testing for HPV.

Afternoon Session

Symposium - Repositioning the health sector to the health industry: the challenge, policy gaps, and potentials.

The symposium was titled "Repositioning the health sector to the health industry: the challenge, policy gaps, and potentials. This title was analyzed from the viewpoint of the researcher and academician (Prof. S. Omilabu), the national agency overseeing the regulation of food, diagnostics, and drugs in Nigeria (Dr. M. Eimunjeze), and the viewpoint of a private foundation and research sponsor (Mrs. Zouera Youssoufou).

From the researcher's point of view, Prof Omilabu identified the need to improve the visibility of work done by collaborating with media experts with proper clarity in communicating research findings. He mentioned that the potential that exists in the health sector can be better harnessed when researcher increase collaborations and proper dissemination of findings. From the regulatory viewpoint, all developed medical diagnostics and research tools should be registered by the National Agency of Food and Drug Administration and Control (NAFDAC) and the agency is open to collaboration with research involving clinical trials.

Evening Session

10th Distinguished Lecture

This year's 10th Distinguished Lecture was titled "Exploring Biochemistry as the anatomy of life sciences for solving health challenges and building human capacity: My Odyssey". Presented by Dr. Bamidele Iwalokun, a Deputy-Director of Research and Director of the Central Research Facility, at NIMR. In his presentation, he discussed his academic journey, his transition from lecturing to a researcher, and his contribution to the diverse field of Biochemistry ranging from studies on malaria, sickle cell anaemia, shigellosis, and antimicrobial resistance amongst others. He highlighted his different contributions to science, his love for mentoring in biochemistry and other life science research and education, and the need for continuous mentoring for up-and-coming researchers.

Day 2

Morning Session

Concurrent Oral Abstract Sessions 5 and 6

Abstract sessions 5 and 6 were done as concurrent abstract sessions where participants attended either of the sessions based on their research interests.

The oral presentations and their key findings/recommendations included the following

1. Willingness to pay for HPV vaccine among women living with HIV in Lagos State Nigeria.
Key Finding/Recommendation - Willingness to get vaccines reduced when money was involved. The further focus should be placed on health education and increasing access.
2. Oncogenic human papilloma infection is high among at-risk women in Nigeria
Key Finding/Recommendation - HPV is prevalent among the general population and higher in pregnant women compared to other at-risk groups. There is a need for more research to determine the national prevalence of HPV in Nigeria.
3. Census of microbiome and resistome in the gut
Key Finding/Recommendation - The gut is densely populated by microbes and there is an increased chance of antibiotic-resistance genes among the colonizing bacteria population.
4. Molecular detection of beta-lactam resistance genes in staphylococcus aureus isolated from wound infection (a case study of Wudil General Hospital, Wudil Kano Nigeria).
Key Finding/Recommendation - The study identified that beta-lactam resistance was not solely dependent on the presence of blaZ, blaI, and blaR1 genes.
5. Effects of Abelmoschus esculentus Fruit extract on the Malondialdehyde (MDA) levels in the plasma and liver of Alloxan-induced Diabetic Male Wistar Rats.
Key Finding/Recommendation - Treatment with okra extract did not lead to a significant decrease in Fasting Blood Glucose and Malondialdehyde levels in this study.
6. Transitioning from adolescence to adulthood: the lived experiences of female adolescents living with HIV in Lagos Nigeria.
Key Finding/Recommendation - Various challenges impact the transition process of female adolescents to adulthood, and there is a need for further studies to explore interventions that can help reduce certain behavioral traits in female adolescents.

7. Quantum Evaluation and Therapeutic Activity of (E)-N-(4-methoxyphenyl)-2-(4-(3-oxo-3-phenylprop-1-en-1-yl) phenoxy) acetamide and its modified derivatives against EGFR and VEGFR-2 in the treatment of Triple Negative Breast Cancer
Key Finding/Recommendation – (E)-N-(4-methoxyphenyl)-2-(4-(3-oxo-3-phenylprop-1-en-1-yl) phenoxy) acetamide and its modified derivatives showed theoretical effect on target onco receptor.
8. Changes in physicochemical properties and enzymes associated with ripening of snake tomato (*Trichosanthes cucurmerina* L.) fruit.
Key Finding/Recommendation - Pectin methylesterase, poygalatorunase, and cellulase are responsible for the hydrolysis of pectin and cellulose in snake tomato.
9. Assessment of Air Quality in Adaranijo Market and Neighbouring Residential Buildings in Gbagada, Lagos, Nigeria.
Key Finding/Recommendation - Air pollution in Gbagada was as a result of human activities.
10. Factors Affecting COVID-19 Testing Behaviours Among the Population in SouthWest Nigeria.
Key Finding/Recommendation -
11. Assessment of Dyslipidemia for the Prevalence of Metabolic Syndrome in Early, Mid, and Late Nigerian Adolescents with High Level of Fasting Blood Sugar and with Systolic and Diastolic Hypertension.
Key Finding/Recommendation - More studies is required on the nutritional and health effects of school children on the prevalence dyslipedemia

Plenary Session II

The second plenary session was titled “The health industry in the shadow of COVID-19: Focus on One Health, programme integration, and sustainability”. The title was addressed by distinguished experts in different public health intervention programmes in Nigeria.

Dr. Eladejo of the Nigeria Centre for Disease Control (NCDC) highlighted the prompt response of the NCDC during the COVID-19 pandemic and they have emergency units in almost all states in Nigeria to respond to emerging public health challenges.

Dr. Akpan, of the Division for the Control and Elimination of Neglected Tropical Diseases (NTDs), Federal Ministry of Health, Nigeria in his presentation on ‘How integrating health programs can benefit the control of NTDs mentioned that there is still no integration of the NTD programmes with

other programmes in the health sector, and there is a need for more sensitization on the NTDs for more awareness. Dr. Uhomobhi of the National Malaria Elimination Programmes also corroborated that there is insufficient support and facilities to encourage the integration of the malaria programme with other programmes. Some of the key challenges identified in this session were the lack of collaboration across different public health programmes and the decline in funds from the government and donor agencies.

Joining online for his presentation, Dr. Boyd of the US Centre for Disease Control (CDC) talked about preventing infections, interrupting disease transmission, ensuring access to high-quality services, and monitoring infections. He also explained that integration allows synergy, is cost effective and is a key to the overall public health sustenance using the successful integration of COVID-19 with HIV programs during the pandemic as a case study.

Mid-Day Session

Viral Haemorrhagic Fever Round Table

This round table session themed “Emerging and re-emerging diseases in Nigeria” was sponsored by the Viral Haemorrhagic Fever Research Group, NIMR. The round table discussion covered the problem of flooding in Nigeria and the resultant emerging and re-emerging infections that this may pose. The discussion centred on the following topics

- Tracking the epidemiology of pathogens of public health importance in Lagos, State.
- Microbial analysis of sachet water sold in Lagos State
- Molecular Surveillance of arboviruses in Delta State
- Impact of effective control intervention on vector-borne diseases in Nigeria: Lessons learned from Delta State.
- Molecular surveillance for Ebola, Marburg, and Nipah viruses from Bats in Kwara State.

Afternoon Session

Abstract Sessions 6 and 7

Abstract sessions 6 and 7 were also done as concurrent abstract sessions where participants attended either of the sessions based on their research interests.

Topics presented in the concurrent abstract session included

1. Minimal resistance mutations recorded among patients on Dolutegravir (DTG)-containing regimen with unsuppressed viral load in Lagos, Nigeria.
2. Antimicrobial analysis of selected soft drinks (kunu, zobo, and brukutu) and their antimicrobial susceptibility pattern in lagos, southwestern, Nigeria
3. Integrons, plasmid replicon types, metallo- β -lactamase encoding genes and antimicrobial susceptibility profile of *Pseudomonas aeruginosa* isolated from clinical samples.
4. Evaluation of a Point-of-Care Circulating Cathodic Antigen (POC-CCA) Urine Assay for the Diagnosis of *Schistosoma mansoni* in Ogun state.
5. Antibiotic Resistance Profile and Plasmid Replicon Types of Non-typhoidal *Salmonella* Serovars Isolated from Food Animals and Humans in Lagos, Nigeria.
6. Investigation of wastewater canals as a means of tracking the epidemiology of bacteria pathogens of public health importance and antimicrobial resistance (AMR) transmission in Lagos State: Preliminary findings.
7. One Health Assessment of Antimicrobial Resistant Bacteria (ARB) and Antimicrobial Resistance Genes (ARGs) from waste effluents and soil of livestock farms in Lagos state, Nigeria
8. Inheritance of purple pigmentation in *Carica Papaya* Linnaeus
9. Molecular detection of flaviviruses in patients presenting with febrile illness in two general hospitals in Lagos State.
10. Prevalence of *aeromonas* species in treated and untreated water in parts of plateau state, nigeria
11. Need for inclusion of AMR into pre-service pharmacy curriculum in Nigeria: A comparison of the Bachelor of Pharmacy curriculum at the University of Ilorin with the WHO AMR competency framework
12. Antimicrobial Activities and Phytochemical Screening of Five Nigerian Chewing sticks.

Networking and Continual Education Session

The mentoring and mentoring session was hosted by the Public Health Information, Surveillance Solutions and Systems (PHIS3) project, a US Centre for Disease Control and Prevention funded project, and the National AIDS, Viral Hepatitis and STDs Control Programme (NASCP), Federal Ministry of Health, Nigeria. The session was structured to introduce the participants to the ECHO

programs and the SPiCE ECHO. There was also an informative session on maintaining good mental health among healthcare workers.

Evening Session

Closing ceremony

The conference was brought to an end on the 9th of November 2022. . One of the highlights of the closing ceremony was the announcement of the winner of the Director-General's young scientist award. This year's winner was Dr. Samuel Amoo with Mrs. Chioma Kunle-Ope as the runner-up. The closing ceremony also featured awards to the different sponsors of the conference.

Acknowledgment

On behalf of the Rapporteurs Sub-committee and the Central Organizing Committee, we thank all participants, guests, speakers, and sponsors for their contribution towards the success of this conference. We also specially thank all rapporteurs that contributed to this report including but not limited to

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