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The Media for Environment, Science, Health and Agriculture (MESHA) was founded in November 2005 in Nairobi, Kenya and is an organisation that provides support to science journalists covering health, development, technology, agriculture and the environment. It does so by offering training workshops, consultancies and encouraging networking through meetings and conferences among journalists, scientists and other stakeholders in Kenya.

The association emphasises on rural journalism and communication.

The idea for the formation of this association sprang up from the fact that there were many organisations and communicators in the fields of agriculture, environment, health and development. However, few organisations in the region bring journalists covering these issues together, for better reporting in the media.

MESHA believes that in a democratic society where science must be answerable to the public, there is need to find new and innovative ways of effective mass communication about the benefits of science, and other areas of concern to the general public.

MESHA aims to ensure continuity, sustainability and consistent coverage of science and development issues as they arise.

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Cover Photo

Kenyan hip-hop artiste and WWF-Kenya council ambassador Juliani and WWF-Kenya staff drink water from River Timau, a tributary of River Njoro.

Photo Credit: WWF - Kenya



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Give women more PrEP options to enhance fight against HIV

Kenya has made significant gains in the fight against HIV and some counties are well on course towards the attainment of the 95-95-95 target. Nonetheless, data from various sources, including the National AIDS and STIs Control Programme (NASCO) and LVCT Health, shows that there are still gaps that seem to be erasing the gains made so far.

For instance, the data shows that Kenya had a target of reducing new HIV infections to less than 22,000 by 2020 but recorded 34,000 in 2022. High new HIV infections (41 per cent) is also being recorded among adolescents and young people aged 15 – 24 years.

The increase in new infections between 2020 and 2022 could be blamed on COVID-19 that pushed response to other diseases to the back-burner as almost all the available resources were concentrated to fighting the novel coronavirus.

However, we have not fought hard enough either, and some of the pitfalls can be attributed to errors of omission and commission by the government, its agencies and non-State actors.

Kenya must therefore up its efforts in the HIV fight if it has to achieve the 95-95-95 target by 2025 and reduce new infections to the lowest level possible. Part of those efforts is the CATALYST Study that is being spearheaded by LVCT Health.

The study aims to catalyse access to new prevention products to stop HIV and assess the implementation of an enhanced service delivery package providing informed choice of Pre-Exposure Prophylaxis (PrEP) products among women.

Data from LVCT Health shows low PrEP uptake and low continuation rates among PrEP users. During a recent science media café, Patricia Jeckonia from LVCT Health observed that available HIV prevention methods have not slowed the epidemic among women. She said women need multiple prevention options that make sense for their lives.

Kenya has approved two PrEP products for women – oral PrEP and dapivirine vaginal ring. Long-acting injectable Cabotegravir (CAB-LA) is yet to be approved. As of December 2021, CAB-LA was approved by the US Food and Drug Administration (FDA) for use as a prevention option.

In Kenya, the developer has submitted new product application to the Pharmacy and Poisons Board (PPB) for approval. But there is one problem; the PPB Board was recently disbanded by President William Ruto and this means this approval may take longer than expected.

Choice matters. It gives an individual the ability to select from an array of options. World Health Organisation systemic review shows that increased choice is associated with increased persistence on the chosen method, better health outcomes, and 12 per cent increase in contraceptive prevalence for each additional method.

Granted, Kenya implements combination prevention (biomedical, behavioural and structural) interventions for HIV prevention. However, more needs to be done to provide women with more PrEP options. The best starting point would be to approve CAB-LA for use.

Photo Credit | Godfrey Ombogo



Patriciah Jeckonia, Programme Manager, Policy and Partnerships at LVCT Health, makes a presentation during a science media café in Nairobi.

HIV retesting during pregnancy the ignored solution to MTCT

By Njeri Murigi | healthreporter3@gmail.com

After *Grace Joan* learned that she was pregnant, she was excitedly anticipating the arrival of her first child. To ensure the health and well-being of herself and the baby, she diligently attended all her antenatal clinics (ANC).

Grace says she instructed her doctor to do a thorough checkup on her first antenatal clinic visit. She wanted to confirm that her child would have no genetic abnormalities, birth defects, and her HIV status.

"I was happy when the doctor told me I was HIV negative and my baby faced no risk. I went home a happy woman. I faithfully attended all my clinics until the very last day," she says.

"Every time I went for my clinics the routine tests were done but I realised that HIV retesting was not done."

After enquiring why, she was told that was not necessary since the initial test was done and another one would be done six weeks post-delivery.

After delivery, when Grace went for her six-week postpartum checkup, she tested positive for HIV. She could not tell when that happened since she was sexually active throughout her pregnancy. Unfortunately, she had also transmitted the virus to her baby.

"This was a shocker to me. When the doctor gave me the results I couldn't believe them. I went for a second and third opinion but the result were the same. I finally accepted my new status and we were put on antiretroviral therapy (ART)," she recalls.

Grace is not the only woman who has infected her infant with HIV. A report by Kenyatta University shows that in Kenya, an estimated 37,000 to 42,000 infants are infected with HIV annually due to Mother-to-Child Transmission (MTCT).

This is despite the fact that the country rolled out a countrywide Prevention of Mother-to-Child Transmission (PMTCT) programme to reduce HIV infection in children because the main route for HIV transmission among children is through birth. However, the causes of this sustained high MTCT rate are not well documented.

Data from the National Institutes of Health, an agency of the US Department of Health and Human Services, shows that without antiretroviral treatment, the risk of HIV transmission from infected mothers to their children is 15 to 30 per cent during gestation or labour, with an additional transmission risk of 10 to 20 per cent associated with prolonged breastfeeding.

Speaking during a recent media café organised by the Media for Environment, Science, Health and Agriculture (MESHA), Patriciah Jeckonia from LVCT Health said that some of the reasons MTCT rates are still high are women not attending antenatal clinics, the knowledge gap among healthcare providers, and lack of testing kits.

However, there is another major cause that has always been neglected; the lack of HIV retesting throughout the pregnancy.

Although international organisations such as the World Health Organisation (WHO) and the Center for Disease Control and Prevention (CDC) provide guidelines on HIV testing during pregnancy, Jeckonia says currently, most hospitals only do the test when one is starting her antenatal clinics, and no retesting is done until six weeks after delivery.

"A majority of women are tested at the start. Very few of them get to be tested in the third trimester, or even during labour since most hospitals don't have enough test kits," said Jeckonia.

“They get the next testing maybe six weeks after delivery, which is also not a guarantee. Available guidelines say that a pregnant woman needs to test for HIV at least three times before putting to bed.”

The Kenya Demographic and Health Survey 2022 shows that 95 per cent of women age 15–49 who gave birth in the two years before the survey were tested for HIV during ANC or labour and received results.

Peter Mwangi, a nurse at Kenyatta University Teaching, Referral & Research Hospital (KUTRRH), says that although most hospitals know those guidelines, very few follow them to the letter. Hospitals also don't create awareness about retesting and its benefit; thus, most women don't ask for it.

Apart from hospitals not offering or prioritising retesting as a routine part of prenatal care, women are also resistant to go for retesting even after they are asked to do so simply because they underwent the first contact test.

“HIV-related stigma and discrimination still exist in various regions and communities. Some pregnant women may be reluctant to undergo retesting due to fear of judgment or discrimination. Additionally, healthcare providers may avoid recommending retesting to avoid stressing or stigmatising pregnant women living with HIV,” says Mwangi.

Jeckonia said retesting is important because one can test negative during the entry test but in the real sense, she is positive. This happens because during testing, one could be in the window period when it is difficult to detect the virus.

Early detection is crucial for initiating timely interventions and treatments to reduce the risk of transmission to the foetus.

Retesting also offers an opportunity for healthcare providers to connect pregnant women with additional supportive services.



Participants attend a media science cafe on the CATALYST study on HIV by LVCT Health, in Nairobi.

These may include access to specialised HIV care, mental health support, adherence counselling, nutritional guidance, and social support networks, which can improve overall health outcomes for both the mother and child.

“HIV testing programming is a key area for us to look into. That is why we are pushing our government to invest in HIV response and testing kits. If the government can make the test kits available, we will not have a lot of missed opportunities,” says Jeckonia.

Mwangi says retesting should be integrated into the standard prenatal care guidelines and be considered a routine part of antenatal visits to significantly reduce MTCT cases and improve overall maternal and child health outcomes.

He says governments, healthcare providers, and relevant organisations should also work together to raise awareness, provide training, allocate sufficient resources, and reduce stigma to ensure that pregnant women receive comprehensive and evidence-based care, including regular HIV retesting.

Efforts should also be made to improve access to HIV testing services, particularly in rural or underserved areas.

“Comprehensive training programmes should also be organised for healthcare providers, including doctors, nurses, midwives, and counsellors, to educate them about the benefits of HIV retesting during pregnancy and how to conduct the tests with sensitivity and respect for the patients' rights and privacy,” adds Mwangi.

Early detection is crucial for initiating timely interventions and treatments to reduce the risk of transmission to the foetus.

Undying mother to child HIV transmissions blamed on ignorance

Photo Credit | CDC



Jelius Muraguri, a nurse, discusses HIV prevention and care with a mother attending a clinic.

By **Tebby Otieno** | tebbyotieno62@gmail.com

Life was okay for Queenter Achieng' until her toddler began to be sickly and had to be taken to hospital at month four, only for both of them to test HIV-positive.

During pregnancy, and being her first, the 24-year-old snubbed hospital visits not for anything but because she did not know she was supposed to get antenatal care.

"When she was three months old, my daughter would cry a lot. I began to wean her at that age because I had inadequate milk. She got so ill at four months and I had to be tested for HIV. I

turned out positive," she says, adding that she had also unknowingly transmitted the virus to her child.

Ms Achieng' was put on antiretroviral therapy (ART) and receives treatment at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) in Kisumu.

The hospital has a support group for HIV positive people, who meet to discuss challenges and how to live positively. "There was a time I had challenges adhering to medication because after I would start coding on my computer, I would sometimes forget to take drugs. So, I resorted to using sticky notes on top of my laptop to remember," says the software engineering graduate.

With global and national data showing that HIV prevalence and new infections are higher among women, scientists are working to ensure as many HIV prevention products are available to keep the number from rising.

According to scientific evidence, there is no perfect HIV prevention method yet, so having a variety in the market will allow individuals to find what works for them. The monthly PrEP ring is one of the products that was developed in response to women's ongoing demand for discrete products. Once it is safely placed in the vagina, the woman's sexual partner cannot know of its existence.

"Women are finding it difficult to negotiate with their intimate partners about HIV prevention because when they do that, the partner thinks that they are cheating," says Patricia Jeckonia, the Programs Manager Policy and Partnerships and MOSAIC Project Director at LVCT Health.

In Kenya's Kisumu County, the Catalysing Access to New Prevention Products to Stop HIV (CATALYST) study, a Maximising Options to Advance Informed Choice for HIV Prevention (MOSAIC) flagship product introduction study, was recently launched nationally.

Currently, oral Pre-Exposure Prophylaxis (PrEP) taken by HIV-negative people to reduce their chances of contracting the virus is 96 per cent effective. However, the product has a high number of drop-offs, resulting in HIV infection among those who use it.

"We have more people on oral PrEP dropping off quite quickly compared to those who are using the ring for the same period. The data in Kenya shows that after month one there are about 50 per cent drop offs and by the time you get to month three, we basically are reporting probably between 12 per cent and 20 per cent, which is worrying," Jeckonia said.

Photo Credit | Godfrey Ombogo



Millicent Kiruki from LVCT Health answers a question during a MESHA science media cafe in Nairobi.

The CATALYST study aims to provide and evaluate an improved service delivery package that includes oral PrEP, a PrEP ring, and injectable Cabotegravir to reduce new HIV infections. The implementation science study aims to identify and resolve the challenges these preventive products face.

The challenges include study participants reporting experiencing pelvic pain, unusual vaginal discharge, and comfort after inserting the PrEP ring.

“We tell a lot of women when you have not inserted the ring properly, when you sit down or walk, you will be uncomfortable. It’s important that one checks whether they have inserted it correctly or goes to a provider to fix it whenever there is discomfort,” says Jeckonia.

Previous four studies on the ring named Aspire, The Ring Study, Hope and Dream have shown 27 per cent, 30 per cent, 39 per cent and 63 per cent success rates, respectively. However, as participants’ knowledge of the monthly ring has grown, so has its efficacy.

The latest data shows that women who could use the ring correctly and consistently were found to reduce HIV infection risk by up to 75 per cent, what Patricia says is encouraging because it increases the chances of its implementation, as opposed to the previous low efficacy recorded in first clinical trials. “Now we know if you use the ring correctly and consistently, there will be higher efficacy,” she said.

CATALYST is also responding to concerns about safety of PrEP ring among pregnant and breastfeeding women. “A study has shown that the ring is safe for pregnant women from the 30th week onwards, as well as breastfeeding mothers,” she said.

According to the Kenya Demographic and Health Survey 2022, which was conducted in collaboration with the Ministry of Health, only 48 per cent and 49 per cent of women and men, respectively, aged 15 to 49, have heard of PrEP. Among them, 7 in 10 women (71 per cent) and 6 in 10 men (62 per cent) support its use to prevent HIV transmission. However, only 48 per cent of women and 49 per cent of men have heard of PrEP, while 92 per cent of women and 93 per cent of men in the same age group have heard of ARVs. Up to 76 per cent of women and 72 per cent of men are aware that taking special drugs can reduce the risk of HIV transmission from mother to child.

“We are falling short of preventing mother to child infections. We cannot have women unknowingly transmitting HIV to their unborn children. Kenya has about 9 per cent of those cases. This is unacceptable and worrying because we want to get to zero,” Jeckonia told journalists during a science café organised by the Media for Environment, Science, Health and Agriculture (MESHA).

Even though mother-to-child HIV transmission is still reported in the country, HIV prevention methods are still poorly known. Patricia believes that there is a need for policymakers, donors, governments, and implementing partners to collaborate in order to have a variety of HIV preventive products available, accessible, and affordable to individuals.

The challenges include study participants reporting experiencing pelvic pain, unusual vaginal discharge, and comfort after inserting the PrEP ring.

Solar-powered freezer brings critical vaccines closer to populations

By Joyce Chimbi | j.chimbi@gmail.com

Photo Credit | Joyce Chimbi

Up until 2019, nurses in three health facilities located in the semi-arid south-eastern Kenya's Makueni County struggled to get critical health services closer to hard-to-reach populations in three remote far-flung villages.

Kamboo, and Yiuma Mavui are located 17km and 28km away from Makindu Sub-County Hospital respectively. They are also 10km and 22km from electricity grid. Without a cold chain capacity to store vital drugs, health facilities records show vaccination coverage across these villages was well below 25 per cent.

Babies were delivered at home or on the way to hospitals, as mothers lacked between \$6 and \$12 motorbike taxi fare. "Every morning I would collect vaccines at Makindu Sub-County hospital and transport them inside a vaccine carrier box to Ndalani Dispensary. Once the vaccines are inside the carrier box, they are only viable for up to six hours, at which point what is unused must be returned for refrigeration at Makindu Sub-County Hospital or be thrown away," says Benson Musyoka, the nurse in-charge at Ndalani Dispensary in Yindalani.

A donation of a solar-powered freezer to Kamboo Health Centre in February 2019 significantly improved availability and access to vaccination and maternal health services.

"Without a fridge or freezer, you cannot stock Oxytocin. Without Oxytocin you cannot provide labour and delivery services. It would be extremely dangerous to do so because Oxytocin is injected into all mothers immediately after delivery to prevent postpartum hemorrhage. Oxytocin is also used to induce labour," says Francis Muli, the nurse in-charge at Kamboo Health Center.



Benson Musyoka with a vaccine carrier box on his way to Ndalani Dispensary, Makueni County, Eastern Kenya. Motorbikes are the only means of transportation in far-flung areas.

As recommended by World Health Organisation, Oxytocin is the gold standard for preventing postpartum hemorrhage and is central to Kenya's ambitious goal to achieve zero preventable maternal deaths.

In 2017, the health ministry identified substandard care in nine of 10 maternal deaths owing to postpartum hemorrhage, which, overall, accounts for 25 per cent such cases in Kenya.

Usungu and Ndalani dispensaries are each located 10km from Kamboo Health Centre from different directions. Nurses in charge of the facilities no longer travel 28km to and from Makindu to collect and return vaccine doses on vaccination days.

"We collect vaccine doses from Makindu Sub-County Hospital when the month begins and store them in the freezer at Kamboo Health Center. The freezer stores thousands of various vaccine doses collected from the sub-county hospital for all three facilities," says Antony Matali, the nurse in-charge at Usungu Dispensary in Yiuma Mavui.

Two to three times a week, Matali and Musyoka collect doses, including all standard routine immunisation vaccines, except Yellow Fever's. They are then transported to the dispensaries in a carrier box that can hold up to 500 doses of different vaccines, including COVID-19's.

All three facilities have recorded significant improvement in immunisation coverage. At Kamboo, where the freezer is domiciled, records show measles immunisation rates surpassed the target 100 per cent to include additional clients outside the catchment population area of 4,560 people. Overall immunisation coverage is at 95 per cent, above government target of 90 per cent.

At Ndalani dispensary, immunisation rate for measles has also surpassed the target of 100 per cent as additional patients or transit patients from four surrounding villages and neighboring Kitui County get services. Overall vaccination rate for all standard vaccines is between 50 per cent and 65 percent.

In Usungu dispensary, vaccination rate for measles is at 75 per cent and for other vaccines, coverage is hovering at the 50 per cent mark.

Photo Credit | Joyce Chimbi



This solar powered freezer is shared among three health facilities in far-flung areas in Makueni County. It has brought services closer to those in greatest need.

"Usungu and Ndalani have not reached 90 per cent because of missed opportunities and drop-outs.

Missed opportunities refers to patients who drop by a facility seeking a service and not find it at the moment. Drop-outs feel inconvenienced if they do not find what they need in subsequent visits and quit," Musyoka said.

A cold chain or storage facility such as the solar powered freezer, Muli says, is the cornerstone of any primary health unit in cash-strapped rural settings, and all services related to mother and child are the pillars of any health facility. Without these services, he says, "all you have is brick and mortar".

"At Usungu and Ndalani, we do not offer labour and delivery services because we do not have Oxytocin at all times due to lack of storage. We cannot carry it around in the hope that a delivery will happen in a day due to the six-hour time limit," Musyoka says.

Still, pregnant women receive the standard tetanus jabs and all other prenatal services, but close to the delivery period Ndalani and Usungu refer the women to Kambo and follow up to ensure they are served. Facility records show zero infant and maternal mortality.

Annually, the Ministry of Health targets to vaccinate 1.5 million children against vaccine preventable diseases such as measles, polio, tuberculosis, diarrhea and pneumonia.

Currently, one in six children under one year do not complete their scheduled vaccines. Only one in two children below two years receives the second jab of Measles Rubella and only one in three girls aged 10 have received two doses of HPV vaccine, which protects against cervical cancer.

There are efforts to seal the gaps. For instance, HPV vaccine was introduced in Makueni in March 2021. Musyoka vaccinated 46 girls aged 10 years with the two doses of HPV vaccine in 2021 and another 17 girls received their first HPV dose in 2022.

The low cost but high impact solar powered freezer was donated to test the difference between a fridge and a freezer in vaccine storage and preservation for resource constrained facilities in remote rural areas. Vaccines are generally stored in a fridge where temperatures range from 2°C to 8°C.

The freezer, he says, is superior as temperatures can go to below 0°C, which is ideal for more heat sensitive vaccines such as Polio, Measles and BCG. The freezer maintains temperatures of 8°C at the top and temperatures drop as you move towards the bottom of the freezer.

"Vaccines are therefore organised in line with their most suitable temperature ranges. This way, we have noted that vaccines are remaining viable for longer periods and we have significantly reduced wastage," Muli says, adding: "The freezer saves time because we can collect many doses from the sub-county hospital at a go and remain viable for a longer period. This prevents missed opportunities and drop outs."

The freezer has a superior vaccines temperature monitoring gadget that can provide a history of temperature readings and help determine whether vaccines have maintained recommended temperature limits, especially overnight. The gadget also has capacity to signal the onset of a mechanical problem for timely response.

"The freezer is connected directly to solar panels, which are light sensitive, so very ideal even during the rainy season. The only requirement is that solar panels are wiped at least once a month because when they collect dust, their capacity to absorb heat or light is compromised," Muli says.

Still, Musyoka and Matali say the sharing strategy is time consuming because of a tedious vaccine record keeping process. There is also interruption of services because every six hours on the day of immunisation, they have to transport unused doses back for storage. Musyoka and Muli are the only nurses in their respective facilities, while Kambo has two.

Despite challenges, the nurses say they have learnt that primary health units are the cornerstone of sub-county hospitals. The Kambo health facility serves a catchment population of 4,562. Ndalani dispensary serves 936 while Usungu serves 1,355.

"We have expanded access to services and therefore reduced the burden of care at Makindu Sub-County Hospital. We have reduced healthcare provider to patient ratio at the sub-county level by bringing services closer to the people," Musyoka says.

The healthcare providers hope for solar-powered freezers in all the local health facilities. They also recommend that health facilities in close proximity be facilitated to enter similar sharing routine to help close the gap in provision of critical life-saving vaccination, labour and delivery services.

Photo Credit | Charles Mghenyi



Health workers prepare to test for COVID-19: Scientists say that natural immunity gained from infection may offer some protection to the individual.

Experts promote vaccination to achieve herd immunity against COVID

By Omboki Monayo | omboki2725@gmail.com

African states should not drop their guard against COVID-19 since the world is not yet free of the virus, experts have said.

Vaccination has been established as the most effective way to secure and sustain herd immunity against the COVID-19 virus, which plunged the world into an unprecedented public health emergency from 2020 to 2022.

According to Dr Francis Angira of Kenya Medical Research Institute (KEMRI), there is personal and group or herd immunity.

“Herd effect, population, community or social immunity is the protection from becoming infected with a particular infectious disease as a result of the people around you not being prone to the infection. It is also known as herd effect, population, community or social immunity. You acquire it in relation to other people,” he said.

In an interview with Sayansi Magazine, Prof Walter Jaoko, a virologist and lecturer at the University of Nairobi, described herd immunity as the protection achieved by having a large portion of a population immune to a particular disease-causing agent or pathogen.

“It is the protection you acquire when people around you are protected,” said Prof Jaoko.

He said individuals acquire natural herd immunity through infection with a disease or the provoking of the immune system to resist infection via vaccination. “Individual immunity is acquired by virtue of personal immunity in relation to people around you. On the other hand, group immunity is acquired via infection with a disease or through vaccination,” said Prof Jaoko.

“Herd immunity is therefore the protection acquired as a result of people around you being protected,” he added.

The scientist told Sayansi that personal immunity was a measure of individuals’ level of protection against infection. “For immunity at a personal level, we focus on individual immunity. However, for herd immunity, you do nothing as an individual because most of the people around you are protected,” he said.

Prof Jaoko said since the human body develops disease-fighting antibodies as a response to infection, “once the body’s immune system recognises the disease-causing agent, it fights the disease by producing antibodies. It then builds up memory cells that can help it rapidly fight the infection next time it occurs.”

“If you have been vaccinated against COVID-19 or infected before, your body has built up a block of memory cells that produce neutralising antibodies. These antibodies will neutralise the disease carrying agents and no infection will occur,” he added.

The expert said the vaccines’ primary aim is to protect against severe disease and not infection, adding that the safest option for individuals was to get vaccinated.

While admitting that immunity developed through infection could provide some level of infection against the viral disease, Dr Angira said protection from vaccination lasts longer. “Natural immunity gained from infection may offer some protection to the individual.



Testing for COVID: WHO data indicates that nearly 290 million people in Africa completed their primary COVID-19 vaccination series as at December 4, 2022.

But immunity gained from vaccination protects the individual from risk of long COVID and death," said Dr Angira.

Africa grapples with low vaccination coverage rates. By July, World Health Organisation (WHO) records showed 768,237,788 confirmed COVID-19 cases with 6,951,677 deaths.

In a March 30 report, Kenya's Health CS Susan Nakhumicha confirmed that no Kenyan had died of COVID-19 in 2023. The statistics also show that Kenya's plans to vaccinate about 70 per cent of its adult population by December 2022 failed, with only 37 per cent success. Kenya's Health ministry says more than 19 million of the 23 million administered doses were given to adults while 3 million targeted children aged between 12 and 18 years.

With the rate of infections slowed down globally, experts are now concerned that there could be growing laxity around safety precautions to prevent widespread, deadly infections.

A combination of vaccine hesitancy attributed to disinformation, apathy among populations and lethargic national vaccination campaigns has left the East Africa region's vaccine stockpiles at the risk of reaching their expiry date.

Should this be a cause for the country to sit on its laurels and celebrate? Prof Jayne Byakika, the Incident Manager for the COVID-19 Incident Management Support team at the WHO regional office, said there was need to scale up vaccination levels since the virus had not been eradicated.

"Vaccination is the one proven preventive tool we have at the moment. Vaccination rates need to be increased because COVID-19 is still here and is not likely to be eradicated for a long time," says Prof Tusiime.

She said there remains a present and urgent need for governments and other stakeholders in the healthcare sector to step up campaigns to remind people about the importance of vaccination.

"We need to convince our people, especially the elderly, to be vaccinated because they are an easy target for the virus. We should use media and public health information systems to increase demand for them to get their doses," she said.

Prof Jaoko now calls on Kenya to vaccinate at least 75 per cent of the population against COVID-19 to achieve herd immunity.

WHO data indicates that a total 291 million people in Africa had completed the primary COVID-19 vaccination series as at December 4, 2022, representing 24.9 per cent of the region's population.

Only three countries in the region have surpassed the target that entails at least 70 per cent of their population having completed the primary series. These are Mauritius at 86.0 per cent, Liberia at 78.9 per cent and Seychelles at 76.7 per cent.

What to do with healthcare workers trapped in drug, substance abuse

By Rolex Omondi | rolex.omondi81@gmail.com

Photo Credit | Rolex Omondi

Drugs and substance abuse continues to pose great danger in society, affecting people in all spheres. Usually, victims of drugs and substance abuse look up to health workers for solutions, as they make efforts to recover or change lifestyle.

But things seem to be taking a different turn, as the habits begin to worryingly increase among healthcare workers.

The National Authority for the Campaign Against Alcohol and Drug Abuse (NACADA) describes drugs as any chemical capable of altering the mind, body, behaviour or character of an individual. These include lawful drugs. Some of the commonly abused drugs are alcohol, tobacco, khat (miraa), prescribed medications as well as narcotic and psychotropic substances.

Dr Obara Jametho*, 45, is a health facility owner in Kisumu County, who has been battling alcohol addiction for over two decades. "I was introduced to alcohol due to peer pressure while I was undertaking my undergraduate studies in medicine in one of the top universities," he told this writer at his office.

He was overzealous to fit in his new circle of friends, relieve campus boredom, experiment new things and grow. The medic, who quit his government job in one of the public healthcare facilities and opened a dispensary and consultancy agency, says he struggles to work. "I am physically unfit and my hands shake when I'm sober. I am no longer able to inject using a syringe or perform a surgery," he said with a tinge of pain.



Some of the commonly abused drugs are alcohol, tobacco, khat (miraa), prescribed medications as well as narcotic and psychotropic substances.

A 2022 study by Jaguga et al, found that 44 per cent of healthcare workers (HCWs) countrywide engaged in harmful alcohol abuse since the onset of Covid-19 pandemic.

Quoting statistics from the study, Dr Florence Jaguga said the research on lifetime substance abuse rate among HCWs showed alcohol accounting for 35.8 per cent, tobacco 23.5 per cent, while cannabis, sedatives, cocaine, amphetamine like stimulants, hallucinogens, inhalants, and opioids ranged between 3.4 per cent and 9.3 per cent.

Dr Jaguga, the consultant psychiatrist in charge of alcohol and drug abuse rehabilitation unit at Moi Teaching and Referral Hospital (MTRH) in Eldoret, said a higher prevalence of harmful substance abuse was noted among male HCWs than female ones.

Notably at MTRH, the study shows alcohol abuse among females at 9 per cent and 24 per cent for males. Tobacco smoking accounted for 3.0 per cent (females) and 13.1 per cent (males), while cannabis use by females stood at 0 per cent and 1.5 per cent for males.

Dr Jaguga gave the statistics while giving a keynote speech titled "Substance use among healthcare workers" during a virtual session organised by Kenya Medical Association (KMA) and partners.

She identified some contributory risk factors for substance abuse among HCWs as peer pressure, years of experience (whether high or less), being single, a doctor or consultant, having 11 to 20 years of experience, and availability of substance in workplaces.

Dr Jaguga recommended paying close attention to health impacts of substance abuse by engaging HCWs and the society. "Alcohol abuse contributes to risk factors like cardiovascular, digestive disorder diseases, cancers and injuries," she stated, adding that cannabis and alcohol lead to increased suicidal thoughts, psychosis, anxiety and depression.

The drug and substance abuse, Dr Jaguga said, increases the risk of interpersonal violence and social dysfunction, ultimately turning into a costly affair to society due to less productivity through absenteeism and health impact costs. "Worryingly, the social dysfunction hugely reduces the HCWs' productivity, affects good relationships with workmates, families, community and causes constant financial instability," the medic said.

To safeguard his local dispensary, Dr Obara decided to fully incorporate his wife into the financial management and day-to-day operations. "This has helped us to enjoy some peace with my family and the children's welfare is adequately taken care of," he said with a smile.

Dr Jaguga revealed that in 2020, alcohol use disorder contributed to Kenya losing Sh3 billion through absenteeism and premature deaths. This was in view of the fact that HCWs are a critical resource yet their numbers are so constrained that they cannot adequately serve patients seeking services in health facilities. "Provision of health services is greatly disrupted through constant drugs and substance abuse, leading to professional errors by the inundated staff," she said.

Dr Jaguga opines that the barriers HCWs face in accessing treatment include scarce or unavailable services, stigma, and a culture of stoicism. She calls for individual advocacy at workplaces and initiation of Employee Assistance Programmes (EAP).

Such programmes ensure support for staff with psychosocial issues that impact workplace performance in line with International Labour Organisation (ILO) requirements.

This way EAPs play the role of implementing preventive and treatment programmes for substance use and other psychosocial challenges. "Regular and routine education to staff will help provide accurate information and destigmatisation on harmful substance use," Dr Jaguga elaborated.

"Education on strategies is ideal to promote mental health and well-being so that victims may cope with stress better," she added.

To augment this, screening and brief counseling programmes focused on early identification and treatment, like random and indicated urine and breathe testing for alcohol and other substances, should be done regularly.

Staff support interventions for HCWs should also recommend reassigning of duties or redeployment, offering family therapy programmes and financial education.

Hospital administrators can also constitute EAP committees and come up with policy guidelines for implementing activities related to substance use and the annual work plan as guided by NACADA.

She said resources needed to implement EAP activities include staffing of mental and general health workers after brief training involving champions and peers, budget allocated to committees' activities, use of office or clinic, and good referral mechanisms.

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A section of health workers: There is need to undertake research that may lead to development of web based mental health interventions.

It is against this backdrop that Dr Obara has committed to being a peer counselor and encouraging people to live a drug-free life.

“I have been at the forefront of counseling my colleagues to desist from drugs and substances abuse. I visit learning institutions to sensitise learners on dangers of abusing drugs,” Dr Obara said.

To change the work environment and discourage substance use, Dr Jaguga reiterates that senior managers should come up with policies disallowing the availability of drugs and substances in the workplace and during official events. She said it was ideal to conduct training through NACADA for heads of department and supervisors, initiate favorable work schedules, and support for staff mental health concerns. She called for clear communication on roles and responsibilities to fit in with HCWs’ competencies and job skills.

Of great significance, she says, necessary support needs to be given to employees to develop interpersonal, emotional, and job skills. “Recognise the need for balance between work, family, and personal life demands; reward work well done in a timely and fair manner, and involve HCWs in decision making.”

The Rapid Situation Assessment of Drug and Substance Abuse in Kenya study report by NACADA in 2017 indicates that 12.2 per cent of persons aged between 15 and 65 were active users of alcohol, with 10.4 per cent suffering alcohol use disorders.

The survey also indicates tobacco (8.3per cent); miraa (4.1 per cent) and cannabis at (1.0per cent) as the other substances abused. The United Nations Office on Drugs and Crime (UNODC) reports that in 2018, about 275 million populations between ages 15 and 64 used illicit substances at least once. Of those who use psychoactive substances, 10 per cent to 14 per cent will develop substance use disorder (SUD), which contributes significantly to global disease burden, disability and death.

WHO recommends promotion of individuals’ mental health, rest, practice of gratitude, regular exercise, social support, setting realistic goals, recognizing one’s skills and strengths, being spiritual, getting adequate sleep, and avoiding alcohol and drugs.

On the future right trajectory, Dr Jaguga suggests having more rehabilitation facilities accredited by NHIF to increase access to treatment. There should be research that pilots interventions targeting healthcare workers and develop web-based mental health interventions.

In addition, health facilities management should establish substance use treatment services at various facilities and seniors to take care of young HCWs.

“Life skills training programmes for students should be mandatory,” she stressed, concluding: “Healthcare workers should always utilise on-call support number 0742545530, NACADA hotline number 112 and public sector rehabilitation facilities like Mathare, MTRH, Port Reitz and others.”



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By Joyce Chimbi | j.chimbi@gmail.com

Photo Credit | Joyce Chimbi

Edith Mumbi's twins had low weight at birth and were admitted to the Newborn Unit at a public health facility in Kenya's capital Nairobi in 2014.

She was discharged within two days, and she commuted to the hospital every morning and evening to feed her babies. "At first, they showed signs of improvement, then their situation quickly worsened. I was using public transport where I contracted TB, which I passed on to my babies. By the time I learnt that I had TB, one baby had died," says Mumbi.

Leah Omrunga, a nurse at Mbagathi Hospital, says in the absence of the recommended newborn to nurse ratio, the latter fail to produce desirable health outcomes. According to Healthy Newborn Network, Nairobi's public hospitals have, at best, 1:15 nurse to newborns ratio, against a recommended 1:4 for basic or continuing care, 1:2 or 3 for stable babies requiring intervention, and 1:1 for newborns in dependency care.

Kenya ranks sixth among the African countries with the most newborn deaths. A BMJ Global Health research dubbed "Expectations for nursing care in newborn units in Kenya: moving from implicit to explicit standards" shows neonatal mortality (deaths of a newborn within the first 28 days), is a primary health concern contributing an estimated 45 per cent. Neonates contribute to nearly half and two-thirds of the admissions and deaths respectively among children aged 0 to 13 years in Kenyan county hospitals.

"In 2014/2015 we started to informally embrace the "task shifting task sharing" model in public health facilities. Some of us heard about it in training opportunities by health NGOs, others from Ministry of Health or supervising doctors. We began to informally discuss who does what because you would find a technical staff feeding or washing a baby, which mothers can be trained to do," says Omrunga.

"When a technical staff undertakes such basic tasks, if there are three nurses handling 40 babies, it means one has at least 13.



Nurses are the heartbeat of any newborn unit and the pillar that saves lives. Kenya needs to up its game to achieve a reduction in neonatal mortality to 12 babies in every 1,000 live births.

Nurses use task shifting and sharing model to give babies fighting chance

In an eight-hour shift, each nurse has 37 minutes to care for a baby, without factoring in breaks or other tasks," she adds.

Samwel Makhoha from Nursing Council of Kenya says nurses are the heartbeat of any newborn unit and the pillar that can save lives and place Kenya on track to achieving UN's SDG 3.2. "The SDG targets a reduction in neonatal mortality to 12 babies in every 1,000 live births. Kenya was off-track this on goal for long because the nursing practice has faced challenges making it difficult for Kenya to accelerate progress," he says.

The nursing practice, he says, is characterised by limited resources, heavy workload due to insufficient staff and inadequate guidelines on delegation of duties and prioritisation of tasks ranging from basic care or continuing care for low-risk babies, higher risk babies in need of intervention and babies in dependency care.

UNICEF data show a reduction of neonatal deaths from 33 per 1,000 live births in 2003, to 31 per 1,000 in 2008/09. This, Omrunga says, is a slow progression.

Photo Credit | Joyce Chimbi

“Without clear delegation of duties, morning shifts of 7.30am to 12.30pm can be hectic and chaotic. Major public facilities have three to four nurses handling 20 to 40 babies, supported by one or two casual workers, two to four nutritionist interns, four to six nursing students and one to two doctors,” she explains.

In smaller public health facilities, she adds, you find one to two nurses, one casual, one or two nutritionist interns and a few nursing students. “One doctor makes one round in the morning and sometimes in the evening, and gives instructions.”

Informally, the Task Shifting Task Sharing model achieved a low-cost high impact intervention in efforts to overcome a shortage of human resource. The interventions included training nursing students and casual workers to perform tasks and specifically less technical stuff that they would normally not undertake, and to redistribute routine neonatal care work to create calm and order.

The informal system was formalised through the launch and subsequent systemisation of the Task Sharing Policy 2017-2030 and the Task Sharing Policy Guidelines in Kenya’s New Born Units. This, Ms Omrunga says, is an actionable model for nurses, nutritionists, nursing students, casual worker and doctors to boost progress towards the elimination of neonatal deaths from preventable causes.



Inside a new born unit at Mwai Kibaki Hospital in Othaya, Nyeri County.

Mr Makhoha says the Task Shifting Task Sharing model works despite prevailing shortage of nurses. Despite Kenya having 50,000 registered nurses, only 17,000 work in the public sector. To overcome the challenge and optimise care and outcomes, the model is progressively improving management of available human resource, material and equipment.

Omrunga says the model has significantly improved prioritisation of tasks and adherence to newborn care guidelines.

The nursing practice, Ms Omrunga says, is going beyond numbers, effectively redistributing tasks by developing easy-to-follow neonatal templates for routine care and emergency. “Delegation of tasks covers five main areas.

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We have technical tasks that cannot be shared with less technical staff such as making orders from facility's stores and pharmacy, and resuscitating babies. Each shift is supported by about eight nursing students. Any well trained student can weigh and take vital signs, give oral treatment, summarise a baby's needs and communicate the same to the nurse," she says.

"The third area, with tasks such as cleaning and feeding babies, plus recording amount of milk consumed on a chart, can be done by mothers. The fourth is supporting staff or casuals through proper cleaning of incubators to protect babies from infections. Casuals can also help clean and feed babies."

Jane Anyango, a nurse at Pumwani Maternity Hospital, says before the Task Shifting Task Sharing model was systematised, it was difficult to draw a clear picture of routine tasks and communication procedures. "For instance, a technical staff would leave order for a nurse student or casual to undertake, but because the tasks were not clearly outlined in their terms of engagements, the one assigned would feel they were doing another person's work."

She says this lack of order led the nursing sector to be vilified. Patients said nurses were rude and uncaring, but a lot of it came from fatigue. "On delegate able duties, we include emotional support because this is a pillar of quality healthcare. All these tasks are factored in when we develop routine work plans or templates. We also leave room for emergencies and admissions. This organisation ensures a technical nurse can spend more time providing treatment and care to babies," Anyango says.

Mumbi later gave birth to a premature baby in 2019 at Kenyatta National Hospital. "I had a good experience. I was even connected to a support group at the hospital and received emotional support and information. Even though I had another baby at home, they took time to teach me more skills. The girl is almost three today," she says,

Makhoha says it is all about providing the best care by daily organising and structuring neonatal care with clear job descriptions and work guidelines for routine newborn care, and on handling at-risk babies, factoring in emergency situations. Before, he says, an emergency or new admission would disrupt newborn care work. "Staff would run around and it was not clear who was doing what, and what was not done, as focus shifted to emergency situations," he says.

increase the number of nurses. "The Task Shifting Task Sharing model has helped create routine, predictability and improved response to emergencies. It has smoothed transition from one shift to another, but not addressed the limited staff and resources issue," he says.

"Without addressing the ratio of nurses to babies, our neonatal care systems are not strong enough to significantly sustain a reduction in neonatal mortality. The workload remains high; same number of tasks being undertaken by the limited number of staff.

Photo Credit | Joyce Chimbi



Pre-term birth complications, low birth weight and maternal related factors are among the common causes of neonatal mortality.

The model is, however, not without challenges. Makokha says improving the quality of care requires that neonates receive interventions consistently for days. Even with delegation of tasks, there is still need to

All you have done is provide a roadmap to redistribute the work, but each worker still handles more babies or tasks than they should," he adds.

Makhoha urges the government, health and development organisations to provide more resources to help give every newborn a fighting chance.

Reprieve for HIV positive children as viral load suppression thrives

By Philip Nzinga | phillip.muasya@gmail.com

An unexplained acute weight loss and perennial sickness almost claimed the life of Elvis* when he was only two. Whenever he fell sick, Elvis' mother would buy drugs over the counter or take him to a local dispensary, but that did not seem to work.

One day, when his mother took him to Kitui Level IV Hospital, Elvis tested HIV positive. The last born in a family of five had contracted the virus from his mother during birth.

His mother admits testing HIV positive and being advised on the way forward during an antenatal clinic session. But she was in denial. "I ignored the advice. I did not believe I was HIV positive. Even when I gave birth, I continued to breastfeed the child," she says.

Elvis, now a Form One, was part of the 1,299 orphans and vulnerable children living with HIV, who enrolled in a programme dubbed USAID 4Better Health. The programme targets giving quality health and social services to vulnerable children and adolescents living with HIV in Kitui County.

Joyce Mwangi, a clinical officer at Kitui County Referral Hospital, who takes care of HIV positive children, recalls Elvis' poor state of health when he was first admitted to the facility. He had one of the highest viral loads recorded at the facility - over 800,000 copies (of HIV) per millilitre of blood. "He was sickly, malnourished, always with a diarrhea and skin rashes. He was grossly underweight and had stunted growth," says Ms Mwangi.

Today Elvis can afford to smile, and is clear about his future plans. "I want to become a doctor," he says at his home in Kitui Central.



Kitui County's USAID for Better Health programme manager Kelvin Wambugu, converses with a pupil living with HIV and who is under the programme's support.

Since he goes to a day school, the boy religiously takes his drugs in the morning and in the evening when he returns home.

The clinical officer says Elvis is a success story because his viral load has been suppressed to low detectable levels (LDL) through enhanced antiretroviral treatment. He is no longer at risk of opportunistic infections.

Through the USAid programme, the family was supported to establish a food kiosk that supplements their income. His school fees are also paid under the programme.

Elsewhere at a school in Kitui Central, Marcus*, a class eight pupil, and Ethan*, his younger brother, live with HIV, having contracted it from their mother. We get hold of Marcus during break time, and he says: "Two weeks ago I collected my medication for the next four months. I want to become a teacher," says Marcus.

Through the USAid programme, in partnership with Anglican Development Services – Eastern, the children who had dropped out of school and lived with their grandmother were moved to a boarding primary school on full sponsorship.

Photo Credit | Philip Nzinga



Elvis* (partly hidden), a 15-year-old boy is one of the children and adolescents affected or infected by HIV who are under a sponsored health programme in Eastern Kenya.

"It was important for them to be in boarding school because they had viral spike due to poor drugs adherence," says Kelvin Wambugu, the project's manager.

The children are also enlisted at Kitui County Referral Hospital for enhanced adherence to treatment and close monitoring. This has afforded the two brothers a healthy and comfortable life.

The school's guidance and counseling teacher, who has been trained on directly observed therapy, is charged with ensuring the pupils adhere to drugs. Initially he would personally administer the drugs to the boys, before they left for class; but the teacher says the two now know their status and take medication willingly. Initially the younger boy would be moody, throw tantrums and refuse to take drugs.

"He would say the drugs tasted bad and caused him to nauseate. At some point he did not see the need to take the medication, saying it was not a cure," states the 30-year-old teacher, who takes the pupils for their routine clinics at Kitui County Referral Hospital.

Consistent counseling has enabled the siblings to cope. They have also been put on special diet.

The only other people who know that the boys are on medication are school president and dorm captain. "But even they don't know what the drugs treat," says the teacher, recalling how the boys were emotionally and psychologically when they joined the school last year.

Mr Wambugu, the USAid 4Better Health Project Manager in Kitui, says the programme supports adherence process through payment of transport to clinic, school fees and providing food for vulnerable children like Marcus, Ethan, and Elvis.

Wambugu says the collaboration between the school and health facility has been an effective way to solve drug adherence issues for learners. The programme is working with 72 health facilities and a number of schools in Kitui. "We also incorporate the issues of mother to child transmission and enroll the highly exposed infants to the programme to prevent them from contracting HIV," he says.

And there is a breakthrough. Of the 1,299 HIV positive children, 92 per cent have had their viral load successfully suppressed to low detectable levels.

Ms Mwangi, a clinical officer with vast experience in HIV/Aids management among children, says those whose viral load is suppressed and who adhere to treatment can live full lives. "We give them long appointment drugs and ensure they are not at risk of opportunistic infections," says Mwangi.

Health ministry figures show an estimated 13,000 new infant HIV infections occurring annually, although strategic interventions have been put in place to significantly reduce mother-to-child transmission.

Testing has been hailed as a key entry point to HIV prevention, especially on mother to child transmission because those newly diagnosed with HIV are linked to care and immediately put on antiretroviral therapy.

According to Kenya Demographic Health Survey 2022, in Kitui County, the number of women of reproductive age, between 15 and 49, who had tested for HIV for the last 12 months stood at 76.6 per cent, implying that 76 women out of 100 know their HIV status.

Youth the weakest link in achieving 95-95-95 target, says county

Photo Credit | Ruth Keah



Prudence Kombe (right), a nursing officer at the Malindi Sub-County Hospital, with a participant during a media training at the health facility.

By Ruth Keah | rkeahkadide@gmail.com

Kilifi County is well on course towards achieving the 95-95-95 target in the fight against HIV.

According to a quarterly report released by Malindi Sub-County Hospital, out of the sub-county's total population of 236,549, some 7,341 are HIV positive.

Of the total of the HIV positive residents, 5,840 (84 per cent) know their status and are on care against a target of 6,974, while 88 per cent (5,841) against a target of 6,625 are on anti-retroviral therapy (ART). Some 4,402 people (70 per cent against a target of 6,294) have achieved viral suppression.

The report was released during a media training on progressive reporting on HIV and sexual and reproductive health rights.

The report further showed that viral load suppression level among youth aged between 15 and 24 was at 25 per cent from January to March 2023.

Rehema Nyamvula, a Kilifi youth champion, told journalists that it was sad that the youth, who are a big part of the population, were the least tested or enrolled for drugs. She attributed this to stigma, poor communication from health providers, ignorance and inadequate information on HIV/Aids.

"The county government, through the Health Department, should create youth friendly facilities to help increase testing. Awareness on effects of HIV should be enhanced so the youth can know the risks of ignoring testing and treatment," Nyamvula said.

She appealed to the youth to encourage one another to get a HIV test.

Seif Jira, Dream Achievers Youth Organisation (DAYO) Executive Director, said they had a Youth for HIV Prevention project in Malindi Sub-county that emphasises on prevention to minimise new infections.

The project, he said, targets students, as they are likely to engage in risky behaviours, including drug abuse and sex tourism, which makes them more vulnerable.

"The programme targets 30 students in 10 secondary schools. The students will be trained to train others. The programme targets to benefit more than 1,000 learners. We have also trained 10 teachers from the participating schools to support the project," said Jira.

He said the project aims to encourage HIV testing among learners to enable timely treatment for those who turn out positive. "All those who will test positive will have support, including Sh5,000 worth of monthly food shopping," he said. Prudence Kombe, a nursing officer at the Malindi sub-County Hospital, said stigmatisation and untimely access to drugs in health facilities negated efforts to achieve viral load suppression levels among the youth.

"Viral suppression becomes a challenge to many youth. They prefer taking drugs in faraway clinics where people don't know them, and since they fear disclosing their HIV status to family members, they sometimes fail to take drugs on time," she said.

Kombe said the sub-county was working with civil society organisations to increase awareness on stigma, as well as the HIV and Aids Prevention and Control Act.

"Some of the solutions we are undertaking involve partnering to create awareness on stigma reduction, access to drugs and HIV as a whole," she said.

Every day is a brush with death and courting diseases for boda boda users

Photo Credit | Steve Misori



Boda boda operators take risks daily in their endeavour to eke out a living.

By Steve Misori | misori.village@gmail.com

For John Okoth, who has been a boda boda rider for over a decade, it is a bumpy ride and a brush with death almost every day.

The 38-year-old says his parents died in a motorcycle accident in 1998 when he was only 13 and it never occurred to him that he would be risking the same fate just to eke out a living.

“Several times I have been through life-threatening road accidents. Just recently, I lost one tooth and broke my left arm when my brakes failed and I landed in a ditch. My pillion passenger is still hospitalised and I foot the bill,” says Okoth.

Okoth and his fellow boda boda riders spread across the country are not just risking death through accidents, but also through numerous health complications related to the business.

Health experts warn that long periods of sitting down with a tense posture and riding on bumpy roads can cause shoulder, neck and back pains.

Dr Kennedy Nchimbi, an orthopedic and trauma specialist, says male riders also risk impotence and related problems because the vibration of the motorcycle engine damages nerves in their penises.

“While sitting on his motorcycle, a rider puts undue pressure on the perineum (area between the anus and the scrotum) and restricts blood flow to the penis,” says Dr Nchimbi.

The experts say 39 per cent of all chest-related complications are linked to the motorcycle industry. “Whether one is the rider or passenger on a boda boda, they are prone to the same health conditions. Riders suffering from asthma and other lung diseases are highly sensitive to cold air and can easily get breathing complications,” says Dr Fred Bisso, the Uganda Medical Association president.

Dr Bisso says riders with hyperactive upper airway suffer nasal blockage, oversneezing and discharge.

“In the long run, they develop diseases such as sinus infection, which could lead to complications requiring surgery,” says the eye, nose and throat specialist.

Dr Anne Musika, an ophthalmologist, says the long-term effect of nasal blockage, sneezing and discharge is hearing impairment. She says frequent episodes of this condition may lead to a permanent hearing loss.

“Eyes may be hit by the fast-moving cold air, causing them to turn red. The cold air can cause itching. The fast-moving wind causes tears to evaporate, leading to dry eyes, which are ultimately vulnerable to infection and injury due to the reduced lubrication and cleansing effect derived from tears,” she says.

Frequent boda boda users are advised to dress warm and wear helmets to limit the amount of wind their heads are exposed to. Dr Musika says it is also crucial to wear glasses or goggles that shield the eyes from dust, wind or other foreign objects.

The boda boda riders are also advised to protect themselves from flying objects such as sticks, insects and stones, which may destabilise their focus or harm their eyes.

“Since there is no housing around the passenger, any shock or shaking sends either the passenger or rider flying in any direction. This can be fatal if both lack helmets,” says Dr Musika.

According to the National Crime Research Centre 2020 report, 65.1 per cent of boda boda accidents are due to reckless behaviour of riders.

In February 2021, the government launched a nationwide boda boda training programme, which aimed to instill discipline and order in the sector, but registration fee, perceived by riders as high, discouraged many from joining the training.

The Kenya Institute for Public Policy Research and Analysis (KIPPRA) says the sector operates on weak policy frameworks, leading to increased cases of crime and accidents.



Experts say thermal protection could significantly reduce deaths among infants given that Kenya has hit a dead end.

Keeping the baby warm best solution for newborn deaths

By Joyce Chimbi | j.chimbi@gmail.com

Kenya is struggling to reduce deaths of newborn babies, with a survey showing only a slight improvement.

According to the Kenya Demographic and Health Survey 2022, neonatal mortality (death of newborn infants), reduced from 22 deaths in every 1,000 live births in 2014, to 21 in 2022.

Silvester Kamau, a researcher in pediatrics care, says the first 28 days of a child's life are critical, for it is within this period that nearly half of deaths of children aged under five occur. During these days, the smallest of missteps could prove fatal.

"Chances of a child's survival largely depend on where it is born. Children born in sub-Saharan Africa are 10 times more likely to die compared to those born in high income countries. The risk is even higher in hard-to-reach, remote villages and in cash-strapped rural and urban health facilities," he explains.

Neonatal hypothermia – the reduction in the body temperature of the newborn to less than 36.5°C – remains a major cause of deaths recorded between the first and 28 days of a child's life.

Prevalence of neonatal hypothermia is as high as 87 per cent in certain settings, according to Kamau.

He says thermal protection is the best solution for these deaths.

According to World Health Organisation (WHO), thermal protection is a series of measures taken at birth and in the days after to ensure a baby is not too cold – hypothermia – or too warm – hyperthermia – and maintains a normal body temperature of 36.5 to 37.5 degrees Celsius.

Photo Credit | Joyce Chimbi



Reduction in the body temperature of newborns remains a most pressing health concern as a major contributing factor to deaths recorded between the first 28 days of a child's life.

"We are talking about a warm chain, a set of steps taken to keep a baby in the right temperature. The first step is to ensure at birth the delivery room is warm," says Amina Hassan, a nurse in Griffu village, 57km from Wajir Town.

"Newborns lose heat very quickly and this starts the moment they exit the mother's body. The longer they remain wet, the higher the chances of hypothermia. At birth, the baby should be quickly placed on a warm surface such as the mother's abdomen or chest to maintain skin-to-skin contact, quickly dried and covered even before the umbilical cord is cut."

Other measures are ensuring a baby starts breastfeeding within an hour of delivery and often to produce the calories needed for their body to produce heat. Bathing and weighing the baby should be postponed. The baby should be in warm clothing and provided with warm transportation.

Kamau says as much as possible, mother and baby should stay together. Where skin-to-skin contact or the Kangaroo mother care is not possible, alternative means of keeping the infant warm should be utilised.

These alternatives include heated water-filled mattresses, incubators and radiant heaters. However, babies placed in such devices should be removed every now and then for skin-to-skin contact with a caregiver and their body temperatures taken as frequently as possible.

"Neonatal hypothermia is a problem due to a low adherence to WHO's safe motherhood guidelines on thermal protection for newborns. The guidelines were designed to work even in low income, resource-poor countries where high-tech medical equipment and training are lacking," Kamau says.

"Still, even the poorest of countries can afford the cheap but efficient incubators. The cost of responding to child medical emergencies that could be prevented by observing the warm chain is higher than the cost of providing heated water-filled mattresses, incubators and radiant heaters."

He says while there are other causes of neonatal mortality such as infections, preterm births and respiratory distress syndrome, these conditions are significantly worsened by hypothermia.

For instance, smaller babies or those with low weight at birth and preterm babies lose heat faster, placing them at much greater risk of hypothermia and death.

Adelaide Atieno, a community health assistant in Mathare informal settlement in Nairobi, says Mathare North Health Center is working to address an issue that is largely ignored, and one that impacts on a mother's ability to take measures such as keeping a baby warm once it is out of the hospital.

"It is very important that new mothers be assessed for mental health issues. If a mother is depressed, they are less likely to be mindful of her baby's environment," she says, adding: "There is a system that started at the health facility where new mothers and health providers stay in touch through SMS. Sometimes that is all mothers need to maintain a positive attitude. Community health workers are also assisting and reporting any signs of mental health problems."

Amina agrees, saying factors outside the health system such as culture still place children in harm's way. In certain cultures, she says, there are taboos around handling of the umbilical cord, how it should, for instance, be buried that keeps women out of health facilities.

Home deliveries, she says, increase the risk of neonatal mortality, and child deaths in general for in many cases, children miss out on critical vaccines. Vaccines are lifesaving and some of the doses must be administered at birth or within the first two weeks of a baby's life.

"Sometimes women are afraid, uncomfortable or consider it taboo to deliver in the hands of a man. Sometimes it is religion, other times culture or trauma from experiences such as sexual and gender-based violence. In hardship areas, you might not find a female nurse or health provider," she observes.

She cites Wajir County, where, despite there being improved health infrastructure, other factors bar pregnant women from reaching skilled health attendants. Since devolution, the number of functional health facilities in Wajir County have increased from 58 to 117, while the number of nurses is 335, up from 61.

There are 64 maternity wings and 25 ambulances up from just one at the onset of devolution in 2013. Despite this move in the right direction, Wajir still stands with Mandera and Turkana as places where mothers and babies are more likely to die.

Technology shaping pyrethrum revival path for Kenyan women farmers

Photo Credit | Wakio Mbogho



A cooperative worker spreads processed flowers on a solar-powered dryer.

By Wakio Mbogho

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A new solar-drying technology is enabling women farming pyrethrum in Nakuru, Kenya to maximise on product quality, quantity, and their incomes.

The technology was introduced in Subukia area of Nakuru County, following research conducted by Good People International, a women empowering organisation. It consists of four solar dryers, each with 18 beds measuring 2m by 2m, which can dry up to 288kg of fresh pyrethrum flowers at a time.

Workers attached to the solar dryers pick up pyrethrum flowers from registered farmers on Wednesdays and Saturdays. "Once there they are spread on the tables, it takes a day or two for the flowers to completely dry. We then pack them in sacks, which are sent to the pyrethrum processing company," says Mark Nginya, who is attached to the solar driers.

Racheal Waruguru, an official of the Pyrethrum Processing Company of Kenya, says: "When a farmer comes with her product, we weigh it first and pay Sh230 per kilogramme upfront. She then waits for more cash to be paid once we have analysed and determined the pyrethrin content of her product. The higher the pyrethrin content, the more money the farmer gets."

Ruth Wangari, an agronomist at Good People International, said things had changed for the better for several mothers of children with disability who were initially unable to go out and work. "We also noticed that most of these women lacked land, hence relying on their husbands or fathers to farm," she says.

The organisation has been collaborating with the Kenyan Ministry of Agriculture on initiatives to support women-led homes to secure sustainable income sources.

"We target to support women through the whole value chain, training them on how to grow pyrethrum. We have also guided and encouraged them to open a cooperative society to enable them to manage the market for their produce," says Ms Wangari.

The pyrethrum farmers now form part of the Subukia Pyrethrum Growers membership. "The group helps farmers to find market for their produce and protects them from brokers who seized the business earlier and caused them losses," says Joseph Muchiri, the group's chairperson.

And now the women can count their blessings. "I pluck these flowers when they are fresh and take them to the dryers, because during rainy seasons I might be caught off-guard and my produce might go bad. This really helps me," says Josephine Wangari.

Lucy Wairimu, another beneficiary, says: "Women now have sustainable income. They are able to sustain their families. We usually pluck pyrethrum flowers after every two weeks."

For Josephine Wangari, this is a complete change for local families, especially those headed by women.

"Initially I would take care of my family of six children first before going out to look for farm jobs. I was rarely lucky because most jobs would be taken up by men by the time I arrived. Several times I returned home empty-handed to the disappointment of my children. Many women suffered this too," she says of the project that has prioritised women.

The Ministry of Agriculture has vowed to revive and strengthen pyrethrum industries. The farmers now want the government to expedite its plan to give pyrethrum farmers free seedlings, and ensure reliable water infrastructure for irrigation.

Photo Credit | Robert Malala



Dr Esther Gikonyo, Centre Director at KALRO Kabete.

Research centre develops simple water harvesting mechanism for irrigation farming

By Ruth Keah | rkeahkadide@gmail.com

The Kenya Agricultural Research Organisation (KALRO) occupies approximately 25 hectares in Kabete, Kenya, with an altitude of 1,740m above sea-level. The annual mean rainfall and temperature are about 980mm and 23°C, respectively. It is located approximately 13km from the capital Nairobi.

On the right-hand side, a few metres from the main gate, exists a one-acre farm with flourishing and healthy green crops. Being a dry season, the garden was the main attraction for people who attended the organisation's recent open week exhibition. KALRO is using rain water harvesting technology to maintain the farm.

Dr Esther Gikonyo is the Centre Director at KALRO Kabete. Cognizant of the effects of climate change, the soil scientist and plant nutrition specialist considers this the best time to apply use of water harvesting technology for farming that will yield adequate food.

According to Dr Gikonyo, KALRO tilled the land in January, and irrigated it using the harvested water. "When we tilled the land, it was very dry. But the fruits of our labour are now out for everyone to see. If the community embraces water harvesting technology and does irrigation with it, families will be food dependent," she said.

Dr Gikonyo advised farmers to develop the habit of harvesting rainwater especially now that rain patterns are unpredictable.

Climate change has been blamed for unpredictable rain patterns that have caused farmers to earn meagre harvest, causing food scarcity and famine in some parts of the country.

The process involves collection and storage of rain water with the help of artificially designed systems, which run off natural or man-made catchment areas.

Francis Karanja is the irrigation engineer at KALRO. He says the water harvesting technology is simple and affordable, making it easy to use for irrigation. He says at the farm, the rain water is collected from a roof-like surface and redirected to a deep pit.

"We use black paper to cover the pool, two water tanks and the solar machine to pump the water into the farm," he elaborated.

According to Mr Karanja, the pit can hold up to 4,500 liters of water, which can be used to irrigate the farm for at least three months. "The borehole cost us Sh250,000 and is expected to last more than 10 years," he said.

During the exhibition, different stakeholders showed various technologies they use to farm, including con garden and vertical bag farming. This was in line with the year's theme; "Transformative agricultural technologies, innovations and management practices for food and nutrition security, income and climate resilience."

We use black paper to cover the pool, two water tanks and the solar machine to pump the water into the farm

KALRO calls for frequent soil testing to counter acidity and improve harvests

Photo Credit | Robert Malala



An official displays samples of maize crops planted in soils with different nutritional contents during an agricultural show recently.

By Robert Malala | malalarobert@gmail.com

The Kenya Agriculture and Livestock Research Organisation (KALRO) has raised concerns over decreasing rate of production in agriculture due to declining soil fertility in Kenya.

According to Dr Esther Gikonyo, the Head of Station at KALRO Kabete, most soils in Kenya are short of the 16 nutrients essential for quality crops. "Fertility is declining because of continuous cropping without sufficient replenishment of nutrients in the soil," she said at a two-day agricultural exhibition held at the station.

Dr Gikonyo said about 63 per cent of the soils in areas with high and medium rainfall, which also have the potential for the country's food production, were acidic with an average below 5.5 PH. Most food crops the country relies on require between soil PH of 5.5 and 6.5. "Up to 63 per cent of soils will require correction of the PH through application of lime to reduce the quantity of fertilisers used and increase production," she added.

According to a report released by Agriculture and Food Authority in 2019, food crops, as a sub-sector, contribute approximately 33 per cent of the total agricultural Gross Domestic Product (GDP). The report indicates that food production in Kenya that was about 10.5 million tonnes had reduced by 30 per cent.

Kevin Wafula, a farmer from Pasama village in Teso South Sub-County in Busia, has been growing tomatoes, soya beans, maize and beans for years, but has never tested his farms' soils. All along he has been wondering why the yield is declining despite applying fertiliser during planting, and even at top the dressing stages.

"Last year I planted rose cocoa beans in one and a half hectare of land and harvested 20kg where I expected to harvest between six and nine 90kg sacks," said Wafula.

According to Shaban Wandera, a farmer in Matayos, Busia County, many farmers fear getting into soil sampling because of expenses involved. Others are ignorant.

"It is difficult to convince a farmer to spend Sh1,000 (USD 7) on soil testing and another Sh500 (USD 3.5) as fare to and from Alupe KALRO centre," said Wandera.

The main food crops in Kenya are maize, wheat, rice, potatoes, green grams and beans. Maize remains the principal staple food, and is grown on 90 per cent of Kenyan farms. Most varieties of maize planted in Kenya require soil PH of between 5.8 and 6.0, calling for sensitisation for farmers to adjust and embrace soil testing or use of lime.

In Western Kenya, where the main cash crop is sugarcane, production has been declining, negatively affecting supplies for local sugar factories. This is because farmers continuously plant cane without following procedures or testing their soils to determine the best variety of seed cane and how to neutralise the acidity.

"Sugarcane production has been decreasing here. As a factory, we partnered with other stakeholders and tested soils before advising farmers on the variety of cane to plant. As a result, production is increasing," said Gerald Okoth, General Manager at West Kenya Sugar Company.

Dr Gikonyo advised farmers, particularly in areas with high rainfall like North Rift, Mount Kenya and Western regions, to embrace use of lime and Di-Ammonium Phosphate or Nitrogen, Phosphorous and potassium fertiliser to effectively counter acidity. "All farmers should test soils so they can be given prescriptions that will cure their soils. By so doing, we will achieve food and nutrition security and have resilience in the income and climate changes," she said.



Women feed fish in cages at Dunga Beach of Lake Victoria, Kisumu County, western Kenya.

Why cage technology is possible cure for sex-for-fish at beaches

Robert Malala | malalarobert@gmail.com,

Lake Victoria has been a major source of fish for most Kenyan markets, besides offering employment for thousands at its basin.

Yet fish trade has had its dark side, with women many a time forced to have sex with fishermen, locally referred to as “jaboya”, to get a fair share of the fish selling business.

As a result, the fish for sex trade has been cited as a major contributor to the high HIV prevalence rates in in the Lake Basin.

“HIV/Aids began many years ago and is more rampant in this area because of the jaboya issue,” a health officer in Rangwe, Homa-Bay County, told Sayansi Magazine.

“We have fishermen who demand sex from women to sell them fish at the lake shore,” she added.

According to 2022 national statistics on HIV/Aids prevalence released by National Aids and STIs Control Programme, counties bordering Lake Victoria were leading, with Homa-Bay at 19.6 per cent, Kisumu 17.5, Siaya 15.3, Migori 13.3 and Busia 7.7. These figures surpassed the national prevalence rate at 4.8 per cent. Women were found to be leading with 5.2 per cent compared to men’s 4.5 per cent.

However, a panacea has presented itself in the name of fish cage farming. The technology has, besides tackling

fish for sex trade in the region, shattered the belief that fishing is a preserve for men, and brought women to the forefront in the industry.

Traditional fishing was too heavy work for women, and there were lots of risks, including possible attacks by aquatic creatures, or arbitrary arrests and torture by Ugandan security personnel.

Kenneth Onyango, the Kisumu County Executive Committee member for Agriculture, Irrigation and Fisheries, terms the fish cage idea a reliable gender-inclusive source of livelihood.

Photo Credit | Robert Malala



Time to sell: A trader at the Dunga Fish Market does what she is best at.

"In Kisumu County 20 per cent of women have gone to fish caging. The old lake fishing method was biased. Today, as long as you have capital, you can easily set up your cage," said Mr Onyango.

Francesca Odhiambo, a fish trader at Dunga Beach in Kisumu County for the last 20 years, and Secretary of Chiela Smart Women's Group, tells how her group got into fish cage farming. "Definitely, there is a significant change in our income; like now we have our own cage and we are sure of getting any quantity of fish that our clients may want," she says, adding: "I'm happy that this idea has given us opportunity to have our own fish, instead of getting involved in fish for sex activities."

Fish cage technology was introduced in 2013 by Kenya Marine and Fisheries Research Institute and stakeholders such as Egerton University as a pilot project at Dunga Beach. The Kisumu County government adopted the idea before it spread to other counties.

A vibrant Kowil Women's Group, with 20 members, has also invested in fish cage farming. The group is based at Nyenye Got Agulu Beach, in Bondo, Siaya County, about 95km from Dunga.

"We began fish cage farming in 2018 and the difference is that you are sure of the number of fish you have and an estimate of the money to expect after harvesting," said Evelyne Akello, a member of the women's group.

Emman Otieno, the Acting Director of Fisheries in Siaya County, says women are naturally more committed than men, an added advantage that enables them to receive funding from the county and other financial institutions to expand their business, giving them a better chance of doing well in fish cage farming.

"This year the County Government of Siaya budgeted for substantial amount of money to help farmers procure feeds because this is the main problem when it comes to aquaculture," says Mr Otieno.

In Busia County, the national government, through the Mining, Blue Economy and Maritime Affairs ministry, is constructing a modern fish landing centre at Mulukoba Beach in Budalang'i at a cost of Sh124 million (USD 858,726) to aid value addition.

The Mulukoba Beach has 150 cages. Up to 30 per cent of the cages' owners are women in self-help groups. Pascalia Were, 62, is one such fish cage owner who acquired the new idea last year as a member of Mulukoba Women Fish Mongers.

She says: "This technology has made our work easier. We don't need to waste time chasing fishermen to get fish. We just harvest and sell."

Through this aquaculture technology, it is obvious that women, if incorporated in modern technologies use, can play a major role in diversification of income streams, especially considering the effects of climate change on agriculture.

Malawi, Ghana seed sectors call for more research and adoption of biotech

By Henry Mangome | sciencejournalist2021@gmail.com

The seed sector in Malawi has committed to advocate for research and adoption of genetically modified organisms (GMO) in fighting food insecurity and climate change in the country.

Speaking at a consultative meeting organised by the Seed Trade Association of Malawi (STAM) in Lilongwe, Mangochi North MP Benedicto Chambo said there is a need for the sector to treat the new technology as a spark plug towards industrialisation.

The MP, who is also the director of Pindulani Seed Company based in Mangochi, promised that he and his colleagues in the industry will continue to seek for political will to ensure new technologies are entrenched in the country upon approval by relevant bodies.

“For better productivity, we, local seed companies, must lead by example in accepting biotechnology and look beyond our region for trade so that we enjoy the benefits of enhanced plant biotechnology and new innovations,” said Chambo, who is a member of the Parliamentary Agriculture Committee.

Nessimu Nyama, the Secretary General of STAM, said the country needs to adopt GMO side by side with genome editing if it is to achieve Agenda 2063 pillar one, which calls for better agricultural productivity and commercialisation.

“We cannot, as a country, achieve this target unless seed companies adopt new technologies and innovations such as GMOs and gene editing,” Nyama told the meeting.

Photo Credit | Aghan Daniel



Dr Felix Jumbe: My vision is to ensure that a majority of farmers adopt biotech to counter poor climatic conditions currently haunting Malawi.

To achieve this fete, he said the association had set up an innovation and technologies committee, which will also popularise the technologies with like-minded organisations. He added that they will campaign to ensure that local seed companies and farmers understand the technologies for easy adoption.

Nyama said the country’s experience with Bt cotton had showed that farmers are willing to adopt any new technology that serves their needs. He noted that for biotech to get further endorsements, there is a need for a step-by-step introduction of new technologies.

He admitted that a lot of technologies have not seen the light of day in Malawi because there is no funding from the government and other partners.

The formation of the technology and innovations sub-committee followed deliberations convened by STAM and African Seed Trade Association (AFSTA), which came after a consultative meeting between seed companies’ representatives and the academia held in Lilongwe on Wednesday.

The subcommittee is chaired by Felix Jumbe, a former Member of Parliament and former chief executive officer of State-controlled Agriculture Development and Marketing Corporation.

Jumbe, who owns Peacock Seeds Company, said his vision is to ensure that a majority of farmers adopt biotechnology to counter poor climatic conditions currently haunting the country. He affirmed that STAM supports biotechnology and looks forward to seeing the country do more than just Bt cotton as they explore food crops such as maize, banana and cassava.

In Ghana, the seed sector has been urged to be ready to negotiate for the uptake of biotechnology products.

Addressing members of the National Seed Trade Association of Ghana (NASTAG) shortly after being elected as president of the association, Dr Amos Azin Rutherford told the association members that the conversation on GMOs should be taken to the next level to discuss royalties, licensing, upscaling and trade issues.

Dr Rutherford noted that many seed companies are misinformed about various aspects of biotechnology, hence they have fear of the unknown, yet the facts have been laid bare and it is upon them to negotiate for the technology and make sales out of them.

He added that Ghanaian seed companies should take advantage of the Bt cowpea by partnering with technology developers to secure their share of the market for this crop, which will soon become available to farmers in the country.

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Malawi, Ghana seed sectors call for more research and adoption of biotech

"Farmers in Ghana want high yielding materials, including the GM varieties. It is our work as the seed companies to ensure we provide them with high yielding materials, not otherwise," he said.

Abdulai Abukari, who represents Northern Sector at the board, said he vouches for the technology because he believes there is space for technology in Ghana through numerous calls he receives after a radio programme that he appears in frequently in Ghana.

"Farmers want the technology, so as seed companies, we cannot stand on their way," he said during a discussion on GMOs while reacting to a presentation by Aghan Daniel, AFSTA Communication Officer, during NASTAG's annual general meeting.

Aghan told the seed companies that open-pollinated varieties still dominate the seed market in Africa with a score 54.7 per cent as per research carried out in 2021 by Mordor Intelligence and released in 2022. He said hybrid seeds have a market share of 45.3 per cent in terms of value in 2021, adding that six African countries have commercial biotech crops: Nigeria, Malawi, Sudan, Eswatini, Ethiopia and South Africa.

Zeroing in on Ghana, Aghan informed the meeting that since 2012, the National Biosafety Authority (NBA) has approved the confined field trials (CFT) of four crops namely cowpea (set to become the first genetically modified crop to be grown in the country), rice, cotton and sweet potato, which have been modified for various desired traits.

Photo Credit | Aghan Daniel



Dr Leena Tripathi, the Director of International Institute of Tropical Agriculture (IITA), East Africa Hub.

Gene editing important in drought and herbicide resistance, say scientists

By **Wanjiru Macharia** | wanjirumachari1@gmail.com

The world stands to gain immensely from gene editing as climate change, pests and diseases threaten crop yields and food security, scientists have advised.

According to Dr Leena Tripathi, the Director of International Institute of Tropical Agriculture (IITA), East Africa Hub gene editing is key in helping resistance to bacteria, virus and fungi, yield improvement, nutrition enhancement, climate change tolerance, especially drought, and herbicide tolerance.

Dr Tripathi, who was addressing top seed company representatives attending a webinar, explained that genome editing or gene editing is different from genetic modification.

The two technologies are often confused, especially by non-scientists, leading to misinformation on their application and benefits.

Dr Tripathi explained that genome editing targets endogenous (originating from within an organism) genes without inserting any foreign DNA while genetic modification introduces a foreign gene.

She said the insertion of a foreign DNA in genetic modification is random and can entirely change the genome in unpredictable ways.

She added that genome editing, on the other hand, is simpler and faster and its products are not regulated as is the case with genetically modified organisms (GMOs) in many countries.

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Photo Credit | Aghan Daniel

“Genome editing is a group of technologies that gives scientists the ability to make permanent and heritable changes at specific sites in an organism, mediated by the cell’s own DNA-repair machinery and not involve introduction of foreign DNA,” she said.

Dr Tripathi was speaking during a virtual webinar on Plant Breeding Innovation organised by the African Seed Trade Association (AFSTA). The webinar brought together AFSTA members from all over the world.

The researcher said there may be different requirements for pre-market assessments for the two types of breeding if various country regulations are applied to products developed through New Breeding Techniques (NBTs).

Regulatory Affairs Manager at the International Seed Federation, Khaoula Belhaj, said the criteria for non-GMO and GMO classification is based on the presence or absence of a novel combination of genetic material, as provided for in the Cartagena Protocol.

Dr Belhaj said the latest breeding methods provide opportunities to target global challenges and local needs, and can help achieve sustainable agricultural production and food security.

Dr Tripathi observed that gene editing is being applied to more than 40 crops across 25 countries, mostly addressing agronomy, food and feed quality, or biotic and abiotic stress tolerance.

She said gene edited materials yield heavier and bigger grains than conventionally grown varieties. They also have more protein, vitamins, oil, starch and sugar.

Dr Tripathi explained that nature has been editing genome for a long time, creating variations in plants. Human assistance first came in the 20th century, when mutations were accelerated through chemicals and radiations, and technologies were later developed for precise gene targeted mutations.



Genome editing has been successfully applied in several crops such as maize and has rapidly become the most popular plant engineering approach.

Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) technology, noted the scientists, has rapidly become the most popular genome editing approach with CRISPR/Cas9 tool winning the Noble Prize in 2020.

“CRISPR systems, which are comparatively simple and easy to adopt, form an adaptive immune system in bacteria and have been modified for genome engineering,” said Dr Tripathi.

CRISPR/Cas9 technology has been successfully applied in several crops and has rapidly become the most popular genome engineering approach.

In Kenya, gene editing for tolerance to Maize Lethal Necrosis Disease (MLND), which had severely reduced yield in Kenya by 23-100 per cent (\$180 million annually), was in progress because most of the Kenyan maize varieties were susceptible to the disease.

“The Kenya Agricultural and Livestock Research Organisation (KALRO) partnered with International Maize and Wheat Improvement Center (CIMMYT) and Corteva Agriscience in 2016 to genetically map MLN resistance from an exotic resistance donor,” explained Dr Triparthi.

The aim was to edit the susceptible gene in the CIMMYT commercial lines to its resistance form. Gene editing was done on CML536 and confirmed to be resistant to MLN in the greenhouse in 2021.

Also underway are three additional CIMMYT lines which were edited along with CML536 and are parents to two, 3-way commercial hybrids in Eastern Africa. CRISPR/Cas9 was used to knock out the low germination stimulant 1 (LGS1) gene, drastically reducing Striga germination stimulant activity.

She said genome-edited lines will be evaluated for resistance in the Striga high-burden region of Western Kenya.

Dr Tripathi urged farmers to combine innovative approaches with traditional knowledge to increase the productivity, enhance nutrition and build climate resilience.

Dr Belhaj reiterated the importance of ensuring flexibility in the policy keeping pace with the technology development and to focus on final product characteristics as seeds should be accessible to meet the needs of the farmers everywhere.

Saving Kakamega Forest to protect a community delicacy

By Gabriel Ingubu
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Photo Credit | Gabriel Ingubu

The birds of Kakamega Forest chirp as they move from one tree branch to another. The mid-altitude tropical rainforest that lies in the Lake Victoria catchment area is home to a variety of popular indigenous trees.

The trees offer a natural habitat for a popular delicacy – wood ear mushroom – locally known as *mater*. This type of mushroom is ear-shaped, brown, and gelatinous and is known for its crunchy texture and ability to soak in flavours.

Maurice Otunga, 60, is a mushroom collector. Dressed in a navy-blue nylon raincoat, black cap and gumboots as protection gear, he takes us to the best section of the forest to pick the mushrooms. In his hands are a panga for clearing the way and a small stick to scare away dangerous animals such as snakes.

“This wood ear mushroom only grows on wet logs and older trees that are exposed to the sun,” he says.

On average, Otunga sells about 100 kilogrammes of wood ear mushroom per month. The mushroom is so popular that young boys who graze their cattle, and women and girls who fetch firewood in the forest almost always carry some home as they leave the forest. A kilo of mushroom costs between Ksh400 and Ksh600 (2.5 to 4 dollars), says Kenya Climate Innovation Centre.

Patrick Muchiri, a senior technician and researcher at the Institute of Biotechnology Research at Jomo Kenyatta University of Agriculture and Technology, says mushrooms contain a wide variety of phenol and flavonoid antioxidant which are useful in strengthening the immune system.



James Ligare, the Chairperson of User Right Tree Nursery group and Muliru Farmers Association samples through wood ear mushrooms in Kakamega rain forest.

According to National Farmers Information Service, Kenya produces 500 tonnes of mushrooms per year against an annual demand of 1,200 tonnes.

Locally, *mater* strains from the *Albizia sapp* tree (*Mukangu*), *Ficus Exasparata* (*Museno*) and *Ficus Thorningu* (*Mukumu*) are considered medicinal, and from the Elgon Teak, *Funtumia Africana* (*Mutondo*) *Ficus Lutea* (*Mukavakava*) and forest croton (*Musutsu*) are nutritious.

As a delicacy, *mater* can be prepared either fresh from the wild or dried. Dried *mater* should be soaked in water for one hour before cooking.

Locals advise that only ash filtrate is used to soften them. “You are not supposed to fry them, but instead boil them on low flame with salt and the filtrate. Frying them interferes with the original taste. It’s usually served with ugali,” advises a resident.

In the forest’s section with many quaver trees, a lot of mushrooms germinate after the onset of the first rain. We bump into yet another crew on the same mission in a different section of the forest.

This solidifies the need to protect the forest for the community to benefit from it without any destruction, thus contributing to the Sustainable Development Goals, including Goal 15, which seeks to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Already, the rehabilitation and restoration of Kakamega Forest, which entails the erection of the 117km perimeter electric fence and reforestation of some 220 hectares of degraded forest land, has started.

Most members of the local Community Forest Association are advocating for controlled and monitored movements in and out of the forest to reduce illegal business of charcoal burning and cutting trees.

James Ligare, chairperson of User Right Tree Nursery Group and Muliru Farmers Association, advocates for the fencing. He says gathering anything in the forest interferes with other parts of nature like insect colonies, small plants and nests of small animals and birds through clearing paths and stepping on them.

Through sensitisation, the surrounding community has learnt that there will be demarcated gates to allow them to access and use the forest.

“Fencing is a good idea. Our police are too few for the area they cover and that’s why tree cutting, wildlife hunting and charcoal burning are still being practiced,” Otunga says. He adds that charcoal burners are the greatest enemies of logs that give him good mushrooms and so if the forest is fenced, they may keep off.

Some trees on which the mushrooms grow are only a preserve of the forest, and folklore has been used over the years to keep it that way. For example, the croton megalacarpus, is seen as a bad omen, capable of bringing misfortune to a household, and thus cannot be domesticated.

“How possible is that a bad omen tree is the one with the best ear wood mushroom?” asks Solomon Watai, the secretary of Machtetto Community Forest Association and in charge of Research and Education user group.



Maurice Otunga collects earwood mushrooms in Kakamega Forest. Otunga is a prominent collector of mushrooms, which he sells in Kakamega town. Mushrooms are commonly served in high end hotels in Kenya.

He says the older generation knew the importance of such trees, thus they created scary stories about them so that they can be preserved. He has vowed to lead women and youth to take tree planting as a venture to earn cash and protect the future.

Dr Isaac Misiko, a researcher on fauna and flora in Bungoma County, says while domestication of indigenous trees is a good idea, it should be for the long term. Most indigenous tree species take more than 50 years to mature.

“The ecosystem in the wild greatly differs from home environment, making it difficult for some trees to grow well when domesticated.

The wild has more hidden elements than we can see with our eyes and these elements are the ones that support symbiotic relationships that facilitate growth and sustainability of trees,” says Dr Misiko.

Rhoda Ombwara, Forest Station Manager at Kenya Forest Service Malava station, believes that it is only through social forestry that conservation of the forest will be appreciated by the community.

“Communities around the forest within the range of five kilometres are all members of the Community Forest Association. Through trainings and linkages, they keep a protective eye on the forest, which makes my work easier,” says Rhoda.

This story, which first appeared in the Daily Nation, was produced with support from JRS Biodiversity Foundation and MESHA.

Photo Credit | WWF - Kenya



The training was organised by World Wildlife Fund for Nature Kenya (WWFK).

“Even when Kenya experiences heavy rains, sometimes causing flooding and destruction of residences in Kisumu County’s Kano and South Mugirango in Kisii, reliable safe water supply remains a mirage, said Prof Onyando.

According to Kenya Water and Sanitation Civil Society Network (KEWASNET) CEO Malesi Shivaji, the country has a water supply shortfall of at least 600 cubic metres per capita.

“Kenya is least endowed in water supply terms, with a 400 cubic meters per capita availability, against the UN recommended 1,000,” said Mr Shivaji.

Prof Onyando said Kenya’s water supply status was first estimated along with the country’s population during construction of the Uganda Railway in 1896. “Kenya’s endowment at the time was 20 billion cubic meters, which works out to 8,000 cubic metres per capita,” the scientist said.

WWF-Kenya Freshwater Lead Dr William Ojwang displays Journey of Water Campaign placards during the campaign flag-off in Timau, Meru County.

Experts give insights on saving Kenya from water stress

Photo Credit | WWF - Kenya

By Omboki Monayo
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Kenya should urgently implement an integrated water resource management (IWRM) structure to avoid sliding into a supply crisis by 2030, an expert has advised.

According to Egerton University’s soil and water engineering expert Prof Japheth Onyando, IWRM incorporates aspects of integration, social and natural systems, water quality and coordination with other natural resources, including land, atmosphere and biosphere.

“IWRM must always prioritise water use via a holistic and cross-cutting approach. This means efficiently managing water in totality and not just focusing on potable water,” he adds.



Participants at the Journey of Water Caravan pose for a group photo during the campaign flag-off in Timau at the foot of Mt. Kenya.

Prof Onyando spoke in Machakos, Kenya during the recent Voices for Just Climate Action (VCA) media training session for science journalists and editors affiliated to the Media for Environment, Science, Health and Agriculture (MESHA).

Population growth has seen this endowment level significantly reduce. “According to globally accepted standards, any endowment less than 1,000 cubic meters is classified as water stress.

Kenya is currently classified as a chronic water stressed country, with an endowment of approximately 490 cubic metres per capita," he said.

He added that the situation was projected to worsen with time. "By 2030, the country's endowment will be at 393 cubic metres per capita, and by 2050 just 293 cubic metres per capita," Prof Onyando said, adding that Kenya's demand ratio will increase and surpass availability. "There will be a big difference between what we have versus we need," he said.

Data from the professor's study on national water supply indicate that Nairobi County, currently home to at least 5.2 million residents, will not fare any better in the projected endowment levels.

A report by the Institute for Economics and Peace published in October 2022 showed that Nairobi is the second fastest growing city in the world with a potential to become a megacity and home to an estimated 10.4 million people by 2050.

The city, which gets the bulk of its water supply from Athi River catchment area, will be at a demand ratio of 80 per cent by 2030 and drop to 70 per cent by 2050.

Management bottlenecks were identified as major obstacles to seamless administration of the country's water resources.

Mr Shivaji said the country's water sector suffers from a bloated management structure, with some 18 statutory bodies mandated to carry out different functions. This, he said, has led to uncoordinated administration of its affairs.

"The bloated structure has given rise to several inefficiencies, including duplication of some functions and contradictory terms of reference," the scientist said.



Kenyan hip-hop artiste and WWF-Kenya council ambassador Juliani (right) and WWF-Kenya staff drink water from River Timau, a tributary of River Njoro.

Prof Onyando said many Kenyans suffer from "water blindness" and related wasteful use of the resource. "This comes from the mistaken notion that there is plenty of water all around us, yet we are currently classified as a water stressed nation," he said and encouraged harvesting of rainwater in the city and beyond.

"As a country, we should manage water catchment areas to have more groundwater and surface water stored using dams. Water harvesting should not be dismissed as a poor person's pastime but be universally embraced to significantly reduce shortages during the dry seasons," said Prof Onyando.

Kenya has pledged to restore 5.1 million hectares of forests by 2030. This will absorb an estimated 0.48 Gigatonnes or 480 million metric tonnes of carbon dioxide.

Prof Onyando added: "We can stop the downward trend by protecting our water catchment areas to store more water, reducing the soil loss from construction activities from 600 tonnes of soil per hectare per year to 11 tonnes per hectare and boosting the national forest cover from 7.4 per cent to the UN recommended 10 per cent."



Lake Victoria Tourism Association Chairman Robinson Anyal and Eldah Odongo of Kisumu Water and Sanitation Company (KIWASCO) at the Dunga Boardwalk in Kisumu, western Kenya. The boardwalk gives visitors a sight to behold of Lake Victoria.

Dunga Boardwalk: A gateway to tourism and conservation of Lake Victoria

By **Godfrey Ombogo** | gombogo@rocketmail.com

At Lake Victoria's Dunga Beach in Kenya's Kisumu City is a bridge-like wooden structure that extends a few metres into the water for a picturesque view of Africa's largest freshwater lake.

At one corner of the meandering bridge is a one-roomed wooden house with artefacts depicting the life of fisher folk. Together, the bridge and building make up the Dunga Boardwalk Wetland Gallery, an outdoor museum whose main purpose is to conserve the wetland area around the lake.

The boardwalk was built in 2015 by the Dunga Ecotourism and Environmental Community Based Organisation (DECTTA) and Eco-finder Kenya, with the support of French Embassy in Nairobi and Kisumu Local Interaction Platform (KLIP).

"The main purpose of the boardwalk is to spread the knowledge on why Dunga Swamp needs to be protected and contribute to its conservation," says Victor Didi, the DECTTA chair, adding: "The outdoor museum is also used for educational purposes for environmental groups working in the area to further develop their skills," he adds.

The boardwalk is surrounded by a bush of green papyrus, which acts as an important buffer between the lake and its shore.

According to Michael Nyaguti, the Magnam Environmental Network chairperson, the wetland is an important cleaning agent of the lake, which is now heavily contaminated.

"There is a time some people wanted to clear the wetland areas around this lake, but we went to court and stopped them. A good bit of waste in this water is removed by the wetland around here," says the environmental activist.



A lot of local tourists who visit Dunga Beach in Kisumu usually start their day at the boardwalk.

Didi says apart from the conservation efforts, the boardwalk is an important site for local and international tourists. Currently, he says, the museum receives up to 100 visitors per day.

“It receives many tourists, ornithologists, whose interests is the birdlife around the wetland, and researchers on Lake Victoria,” he says, adding that some of the most prominent faces they have hosted are the French ambassador to Kenya, Kisumu and Vihiga governors and actress Lupita Nyong’o.

The boardwalk charges modest rates for those who visit, and Didi says this is meant to encourage tourism and conservation of the lake and its surroundings. Students are charged between Sh20 (\$0.14) and Sh50 (\$0.35). Local adult tourists pay Sh100 (\$0.7) while children part with Sh50 (\$0.35) to access the museum. Resident international tourists pay Sh200 (\$1.4) (children) and Sh300 (\$2.1) for adults, while non-resident children and adults pay Sh300 (\$2.1) and Sh500 (\$3.5), respectively.

The boardwalk also provides conference facilities, charged at Sh2,500 (\$17.5) for half a day and Sh5,000 (\$35) for a full day. And if you want beautiful sceneries for a photoshoot or videography for a birthday or wedding, you pay Sh5,000 (\$35) and Sh15,000 (\$105) for commercial coverage.

In his Bachelor’s degree thesis, Swedish University of Agricultural Sciences student Freija Carlsten, writes that the wetland gallery could serve as a good example for the rest of Kisumu and towns around Lake Victoria on how to get closer, inspired and educated by nature.

“It can also be a good example and inspiration for how to promote conservation of valuable nature areas and inspire other communities to follow and adapt to good habits,” reads the thesis titled, *Wetland Development in the Context of Ecotourism: A Conceptual Design Proposal for a Wetland Site in Lake Victoria, Kenya*.

Carlsten says this wetland gallery concept can be used elsewhere around Lake Victoria and developed as a series of outdoor museums to underscore the importance of wetlands to the region.

Didi says since 2015, when the boardwalk was built, they have made milestones, including reducing destruction and encroachment in the wetland, employment creation for youth and women, and increasing consciousness in the community on the need for wetland management.

“The boardwalk has attracted many partners – both State and non-State operators. The Kisumu County government in partnership with other organisations has also offered trainings to our group,” he said.

He hopes for more resources to extend the boardwalk’s activities in more areas and attract a larger number of tourists.



Environmentalists march to commemorate the 2023 Climate Emergency Day.

Climate Emergency Day: Activists demand shift to renewable energy

By Stephen Misor | misori.village@gmail.com

Climate activists have urged the Kenyan government to heavily invest in renewable energy and initiate quick action to avert destructive plastic pollution as well as adverse effects of climate change.

In Kisumu, environmentalists at an awareness march to commemorate the 2023 Climate Emergency Day urged the government to increase its efforts to enable just transition to renewable energy.

George Bush, representing Kisumu Environmental Champions, an organisation running a campaign dubbed 'Let Lake Victoria Breath Again,' said calamities awaited countries that procrastinate on climate action and plastic pollution management. "Plastic pollution is a threat to the existence of Lake Victoria," said Bush.

He commended the county government of Kisumu for creating an enabling environment for climate change mitigation. "The government must reach out to Uganda and Tanzania, which share the lake, to scale up conservation measures in the lake basin," he said.

Clive Donnley, a youth and climate negotiator, said: "We need climate action. The budget allocation for key ministries must be improved to tackle the impact of global warming on health and food systems."

He said Kisumu Environmental Champions targeted to restore the lake's ecosystem for the benefit of future generations.

"There is need for ethical integrity in voluntary carbon markets and consideration of protection of human rights in energy transition," he added.

Photo Credit | Steve Misori



Environmental activists take part in clean-up activities in Kisumu city to mark the Climate Emergency Day.

Elsewhere, Martin Mulenga, the Green Cosmos Organisation Director, called for “real” climate action. At a global webinar organised by Environmental Protectors’ Alliance (EPA), the activist asked countries to invest in women and youth to contain effects of climate change.

“We must invest in women for them to be part of the solution. Women and youth are the most impacted by effects of climate change,” he said.

Meanwhile Governor Gideon Mung’aro has approved the Kilifi County Climate Change Act 2023 that seeks to implement climate change mitigation strategies. The governor said the Act puts in place a framework and mechanism for facilitating communities and other stakeholders to respond effectively to the effects of climate change.

At the same time, Environment and Climate Change and Forestry Cabinet Secretary Soipan Tuya has projected the outcomes of the forthcoming Africa Climate Summit (ACS) that will take place in Nairobi in September, saying it will place greater emphasis on Africa’s immense renewable energy potential.

“The ACS is keen on abundant green transition minerals, sustainable agriculture and the globe’s largest carbon sinks as solutions to the current climate crisis,” she said at Think20 (T20) and Sustainable Energy for All (SEforAll) event, on the sidelines of the G20 Ministerial Meeting on Energy Transition in Goa, India.

She said the Kenyan government had put in place intervention measures to bring down emission of heat, as well as capacity building to increase people’s participation in climate crisis mitigation and increase their resilience.

As the climate clock count down to five years left for the world to stop climate change from becoming more disastrous, more environmentalists called for more involvement in efforts to tackle the climate crisis besides quick action.

“As the countdown continues, the crises, including drought, are becoming more visible. This indicates that climate change is real. This is the time to act. It has to be fast,” said Basil Otho, an environmental scientist.

The Climate Emergency Day comes barely three months to the 2023 United Nations Climate Change Conference at the Expo City, Dubai. The conference dubbed COP28 intends to mark the conclusion of the first global stock take, a comprehensive assessment of the progress made in achieving the Paris Agreement goals.

“The COP28 in the UAE is a unique opportunity to demonstrate a real commitment to cutting emissions. It will offer the world’s collective progress towards achieving climate goals,” says Martin Mulenga, director Green Cosmos Organization, Zambia.