Use case: AI-Chatbot for Prevention and Control of NCDs in The Gambia

Overall Objective

Reduce the incidence and complications of non-communicable diseases (NCDs) in The Gambia by providing the population with an accessible, user-friendly, AI-powered chatbot. The chatbot will deliver evidence-based awareness responses including behavior-change advice to prevent and control major NCD risk factors, including tobacco use, unhealthy diet, physical inactivity, and hypertension.

Rationale

According to national data,[1] about one in five Gambian people between the ages of 25 and 64 had three or more risk factors for one or more of NCD conditions. The most recent study reports that 47% of adults have hypertension[2], a sharp increase from 30% recorded in the WHO 2010 STEPS survey[3]. The Gambia's National Multi-Sectoral Strategy (2022–2027) aims to reduce premature NCD deaths by one-third by 2027.

Without effective prevention and control measures, the NCD burden in The Gambia will continue to rise. A large proportion of these health conditions arise from modifiable social and behavioral risk factors, - unhealthy diet, tobacco consumption, and physical inactivity, - yet traditional prevention programs often struggle to reach the entire population, especially in rural or resource-limited areas.

These trends highlight the urgent need for a scalable, digital intervention, particularly one that can reach underserved populations, influence behavior, and alleviate pressure on health systems. The proactive approach not only prevents the onset of disease but also reduces the burden on overworked healthcare systems, offering an efficient solution to manage population health.

[1] High Level of Co-occurrence of Risk Factors for Non-communicable Diseases among Gambian Adults: A National Population-Based Health Examination Survey (2020)
[2] Jobe M et al, 2024. Prevalence of hypertension, diabetes, obesity, multimorbidity, and related risk factors among adult Gambians: a cross-sectional nationwide study. Lancet Glob Health. 2024 Jan;12(1):e55-e65. doi: 10.1016/S2214-109X(23)00508-9. PMID: 38097298.
[3] Cham, B et al. 2018. Burden of hypertension in The Gambia: evidence from a national World Health Organization (WHO) STEP survey *Int J Epidemiol.* 2018; 47:860-871

Personas

- **Citizen with NCD Risk Factors**: Bakary, 42, is a market vendor in Brikama, The Gambia. He spends most of his day at his stall selling vegetables and dried fish. Bakary began smoking in his twenties, mainly during social gatherings, but over the years it has become a daily habit — usually several cigarettes spread throughout the day. He has heard that smoking is bad for his health but feels it helps him manage stress and stay alert during long market hours. Recently, he has been having frequent headaches and occasional dizziness, but he hasn't gone to the clinic because he fears missing work and losing income. He knows some family members have "high blood pressure," but he's never checked his.Bakary wants to understand why he is feeling unwell, but most health information is either too technical or doesn't relate to his daily life. He is aware smoking might be harmful, but he has tried to quit twice before and quickly relapsed — especially when stressed. He has limited time for clinic visits and little access to practical, personalised support for quitting. He fears gaining weight or feeling irritable if he stops smoking. He doesn't know what immediate steps he can take that would make quitting more manageable.

- **NCD Patient**: Fatou, 52, is a market vendor in Brikama, The Gambia. She has been living with high blood pressure for 6 years and was recently told at her local health centre that she is "borderline diabetic." She often forgets to take her medication and struggles to follow dietary advice because most health information she receives is in English, while she is more comfortable in Mandinka. Fatou owns a basic smartphone and uses WhatsApp daily to communicate with family and customers. She wants to stay healthy and keep working but finds it difficult to get reliable health guidance without travelling to the clinic. The nearest health facility is several kilometers away, and every clinic visit takes valuable time away from her work. Most of the health education materials she encounters are in English, a language she struggles to fully understand. At home, she has no system to remind her to take her medication or to monitor her blood pressure, and she often feels uncertain about which of her traditional foods are good for her condition. On top of this, she sometimes travels to the clinic for minor questions that could easily be addressed remotely, costing her both money and time.

- **Ministry of Health Admin**: Awa, 36, is a health promotion officer at the Ministry of Health in The Gambia. She is responsible for coordinating community outreach programs and ensuring that accurate, evidence-based information on NCD prevention and control reaches the public. With limited staff and resources, Awa struggles to engage the large population that needs continuous guidance on healthy lifestyles, risk factors, and early detection. Traditional awareness campaigns often fail to reach people in rural or resource-limited areas. Awa is comfortable using digital tools and social media, but she lacks systems that allow for real-time, two-way communication at scale. She sees the chatbot as a practical solution to

deliver consistent, accessible advice in both text and voice, across popular mobile platforms. Importantly, the chatbot can also provide her with data on the types of questions and concerns people raise most often, helping the Ministry adjust campaigns, tailor health messaging, and monitor population needs more effectively.

Key Features (Minimum Viable Product)

- **NCD health education**: Provides clear, evidence-based information on NCDs, healthy lifestyle choices, and disease management with particular focus on tobacco cessation and hypertension and diabetes management / prevention.
- **Personalized NCD advice**: Delivers tailored recommendations based on private profile data (customized to the NCD use case), user input, chat history, and expressed needs—especially important for individuals with chronic conditions.
- **Mobile-Friendly, Accessible, and Multi-Channe**l: The chatbot is optimized for mobile use and accessible across multiple channels—primarily WhatsApp (widely used in The Gambia), with optional support for SMS, Facebook, and other messenger apps. It supports both text and voice interactions (in English) to accommodate varying literacy levels
- **Gender-sensitive content**: Addressing gender-specific risk profiles across all potential gender and orientation. For example women during pregnancy and post-partum, or any groups having higher rates of smoking and hypertension.

Optional Features

- **Push Notifications and Timely Nudges:** Admins (Ministry of Health) can schedule alerts to be sent to users on topical events such as screening initiatives, disease prevention campaigns, or new government schemes (can also be used to support awareness-raising campaigns during disease outbreaks).
- **Multilingual capability**: Offers interaction in both English and Mandinka to maximize accessibility.
- **Optional Feature – Progress Tracking:** Users can register their personal progress (e.g., through a diary function) to track healthy habits such as tobacco cessation, making the chatbot not only an information source but also a supportive companion in behaviour change.

- **Rewards and Motivation**: The chatbot can provide incentives such as digital stickers, badges achievement milestones, or community ranking boards to celebrate users' progress and encourage sustained engagement.

- **Leverages national resources**: Utilizes data from national databases, such as health facility registries, to guide users to nearby services.

Expected Benefits

- **WHO Report**: According to a recent WHO-ITU digital health report, chatbot-based interventions aimed at reducing exposure to health risk factors could save over 400,000 lives globally in the next decade.

- **Studies in The Gambia**: In The Gambia, preliminary projections from an ongoing study suggest that implementing an AI chatbot focused on tobacco cessation and hypertension management could benefit approximately 1.5 million people and generate over US$ 5.5 million in health cost savings and productivity gains over the next 15 years.[4]

- **Additional anticipated benefits include:**

    - Greater equity in health information access by ensuring rural, low-literacy, and marginalized groups receive the same quality of information as urban residents. Narrowing the health information gap across the country.
    - Increasing awareness of NCD prevention in hard-to-reach communities.
    - Reduction in late-stage diagnosis through early screening and intervention, reducing costs and improving survival rates.
    - Health system efficiency gains by freeing up health workers to focus on complex cases by reducing avoidable hospital visits for basic advice and treatment costs through early intervention.
    - Long-term behavior change reinforcement, through frequent bite sized messages encourage sustained healthier lifestyles and improved quality of life
    - Strengthening national health system resilience by reducing the burden of preventable diseases.
    - Youth engagement for long-term impact builds healthier habits early, fostering healthier future generations.
    - Crisis communication readiness, serves as a rapid-response channel for urgent health updates during emergencies.

[4] Upcoming: UNIATF (2025). Going Digital for noncommunicable diseases. The Gambia. Case for investment in digital health.

- **Anonymous and confidential interaction**: Encourages open discussions about sensitive health topics without stigma.
- **Evidence-Based Decision Making for Policy Makers:**
    - Aggregated data on usage trends, and system feedback supports data-driven planning and policy formulation at both local and national levels.

Your First Step: Review the Technical Resources and Data Sets

Before developing your proposal, visit the GenAI for Good Confluence workspace—the central repository of technical resources supporting this year's Challenge. There, you'll find documentation on the GENIE.AI framework, guidance on data integration, and access to relevant data sets needed to inform and strengthen your application.

Access the Confluence Repository ›

Access the Use Case Data Resources ›