



Leveraging AI
to improve outcomes
in people living with
cancer

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National Minority Quality Forum

Globalization, urbanization are driving lifestyle changes that are causing a **rise in chronic conditions**



1 million

cancer deaths expected in Africa by 2030



40-60%

WRA with overweight/obesity in urban and peri-urban Nigerian areas



1

Number of **Nigerian doctors** per 10,000 while WHO recommends 10:10,000



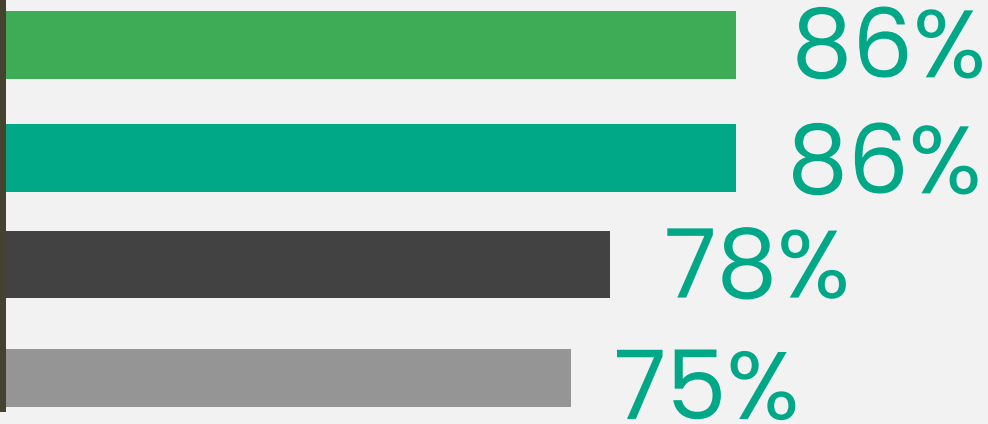
2%

Minimal competency from cancer screening to care given only **2% of health funding** flows prioritize chronic conditions

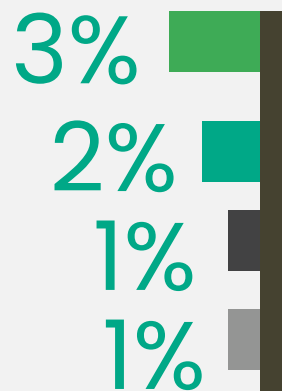
The ecosystem does not exist to screen, diagnose or effectively support people with cancer

Breast examination ever by a health worker

ANSWERED NO



I DON'T KNOW



Open access

Original research

BMJ Open Prevalence of non-communicable diseases and risk factors of pre-eclampsia/eclampsia in four local government areas in Nigeria: a cross-sectional study

Ayoposi Ogbeye ¹, Jonas Kofi Akpakli, ¹ Amira Iwuala, ¹ Imo Etuk, ¹ Kendra Njoku, ¹ Stodia Jackson, ¹ Ugo Okoli, ² Kathleen Hill, ² Victoria Omoera, ³ Folashade Oludara, ⁴ Iniobong Ekong, ⁴ Nneka Mobisson ¹

ANSWERED YES

11%

AMAC

22%

ALIMOSHO

12%

BWARI

24%

IKORODU

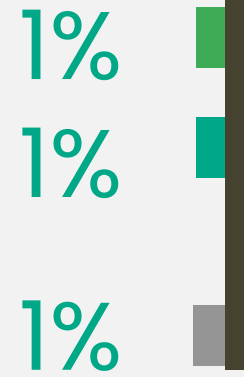


Cervical cancer screening – ever

ANSWERED NO



I DON'T KNOW



ANSWERED YES



5%
AMAC

5%
ALIMOSHO

5%
BWARI

11%
IKORODU



HIV

TESTED FOR HIV

68%
AMAC

67%
ALIMOSHO

61%
BWARI

70%
IKORODU



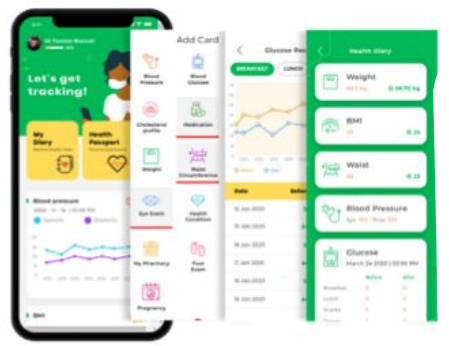


mDoc optimizes the end-to-end self-care experience for people living with or at risk for chronic health conditions by harnessing **quality improvement methodologies, behavioral science, data and technology**

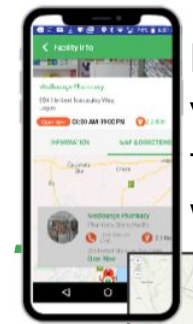


We offer a four-pillar high tech, high touch approach to whole-person centred self-care

Virtual coaches and digital nudges through AI-enabled **CompleatHealth™**



Digital patient navigation via **NaviHealth.ai™** with feedback systems aligned with quality domains



In-person community based **NudgeHubs™** + roving community ambassadors



Tele-education of providers and patients through **MQN™**





Who We Serve

Members on Complete Health™

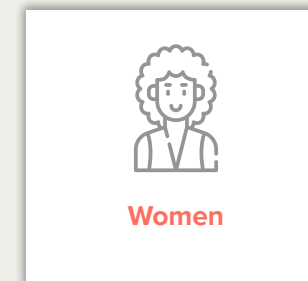
>110,000

People living with or at risk for chronic diseases including mental health conditions

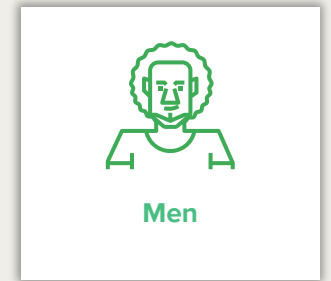
- Cancer
- Diabetes and pre-diabetes
- Hypertension
- Obesity
- Depression and Anxiety

Women's Wellness

Men's Health



Women



Men

82% are women

Majority make less than \$3 a day

67% with smartphones

We support people living with or at risk of cancer in medically underserved communities with a “phygital” approach to **promote access to screening, selfcare support and financing for care**



Innovative financing mechanisms

We create and deploy innovative funding mechanisms using our digital affordability algorithm to provide access to treatment through our partners



AI powered selfcare support

Members are enrolled on the CompleteHealth™ platform and assigned a coach-led care team - a nutritionist, fitness and emotional wellness coaches. Caregivers are supported too



Community outreach programs and tech-enabled NudgeHubs™

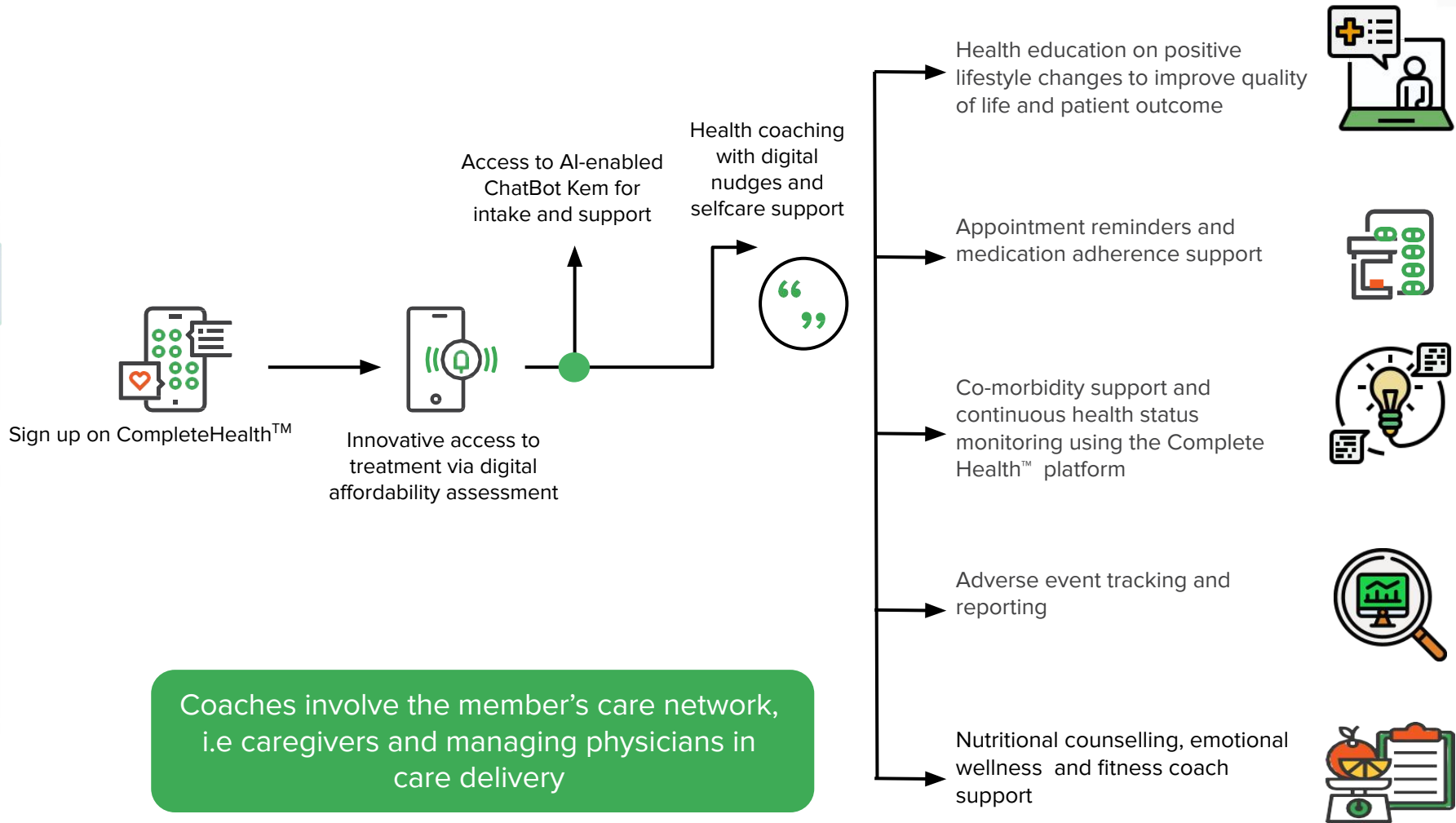
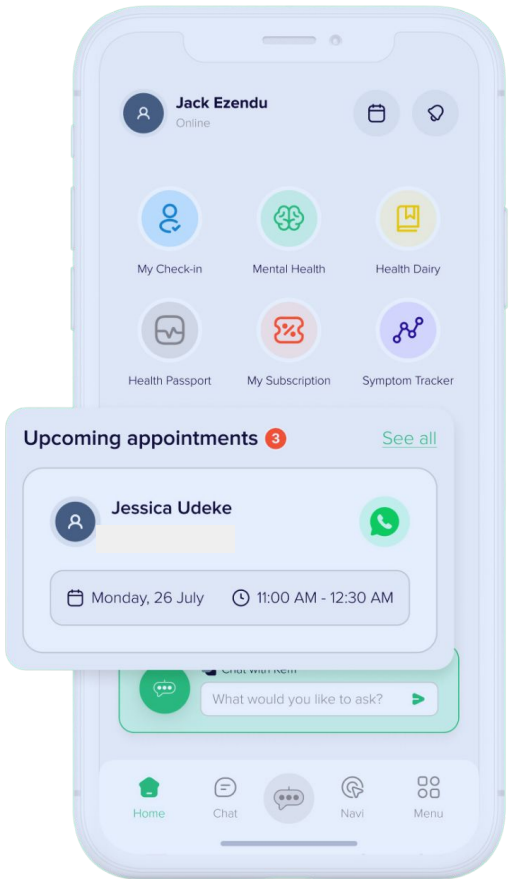
We engage with the community through outreach programs and NudgeHubs™ for cancer screening. Hubs provide meeting points to build digital and AI literacy.





Through partnerships, our community outreach programs provide people with free cancer screenings. They are onboarded onto our CompleteHealth™ platform and can access virtual health coaching services and self care support.

We provide members and their caregivers with an **integrated personalized approach to care and support**

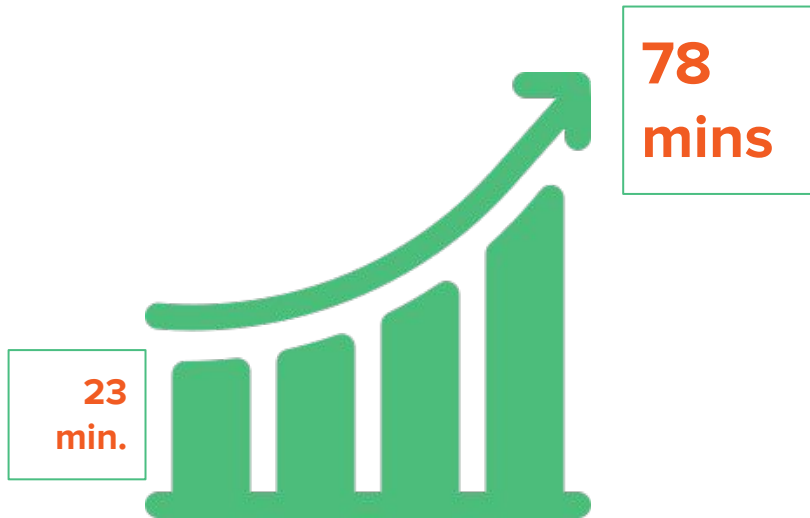


Coaches involve the member's care network, i.e caregivers and managing physicians in care delivery

Members benefit from hybrid exercise sessions to improve their quality of life

Our members virtually engage the fitness coaches on one-on-one sessions as well as group exercise classes.

Members average weekly exercise duration after joining the program for 8 months



When I started my exercise classes with Coach Mike, I was only able to do it on the bed, but right now I'm able to exercise on my feet and move around. And now I don't miss any exercise class and even carry out my exercise in my own time.

Mr. S living with metastatic prostate cancer



Our virtual multidisciplinary selfcare team also provides emotional wellness guidance to our members and their caregivers

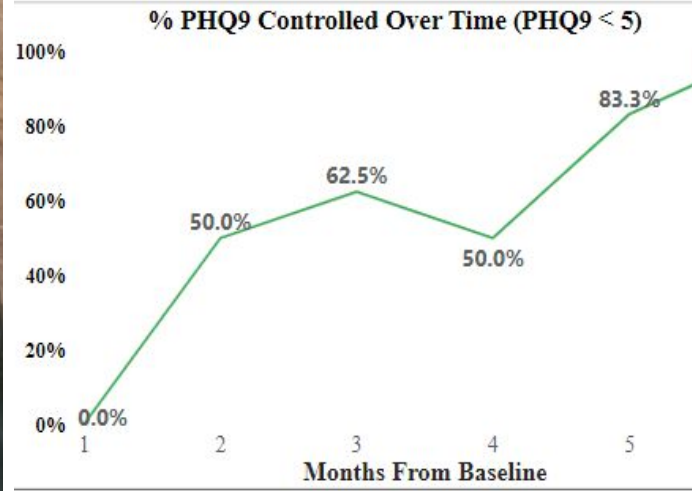
“

After I was diagnosed with breast cancer, I signed on to mDoc's oncology service and was assigned to a health coach. My coach helped me stop seeing cancer as a death sentence and stay on treatment and I'm doing better.”

Mrs. W, a member living with stage II breast cancer



Overall percentage of members who achieved sustained improvement in depressive symptoms over time



The graph shows the average member on the program achieves sustained improvement in depressive symptoms after 5 months of emotional wellness support.

We offer tele-education sessions on various cancer care topics, reaching communities, patients, caregivers, and frontline health practitioners across Africa



THEME:
Celebrating Prostate Cancer Survivors, Inspiring Recently Diagnosed Patients, and Supporting Patients, Caregivers and Their Families.

Meeting ID: 960 0031 1602

Friday, 24th September, 2021
2pm to 4pm

janssen Oncology
PHARMACEUTICAL COMPANIES OF **Johnson-Johnson**

Join us to show support for prostate cancer survivors and people living with prostate cancer. Click the link below to register
<https://echo.zoom.us/j/96000311602>

www.mydoc.com

mDoc
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Tele-education for Clinicians and Leaders in Africa (TeCLA) - *Non Communicable Diseases Series*

TOPIC
Breast Cancer: Screening and Management

Speaker
Dr. Adeoluwa Adeniji
Consultant Clinical & Radiation Oncologist
Marcelle Ruth Cancer Centre & Specialist Hospital

FREE

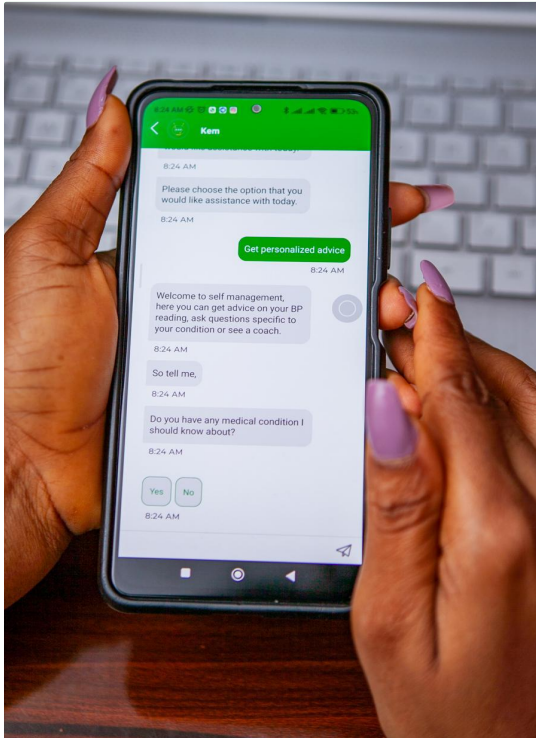
Partners



We believe in the power of responsible AI to transform the lives of members living with chronic conditions such as cancer



We initially created a rules-based chatbot, Kem to answer the expansive inquiries of our members during the pandemic



We recognized the limitations in our approach and began exploring the possibility of integrating Kem with LLMs to deliver a significantly enhanced and more meaningful experience.

Basic Info

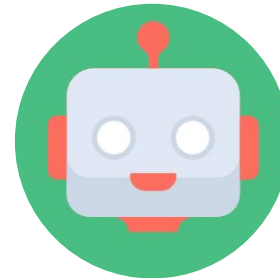
- Name: Kem
- Gender: Undefined
- Role: Health Coach and Intake Coordinator

Goals

- Helping to bridge the gap in knowledge on health topics
- Answering and guiding mDoc members

Meet Kem

Our new chatbot coach team member



Greetings!

My name is KEM, your mDoc chatbot. I will be available to assist with your questions


Interests

- Reading books to expand my mind
- Staying fit by exercising
- Hanging out with friends
- Eating suya and buka food


Strengths




However, there were many **limitations with a rules based chatbot...**




Limited conversational and engagement depth



Scalability issues since it can't handle large volumes of interactions simultaneously.



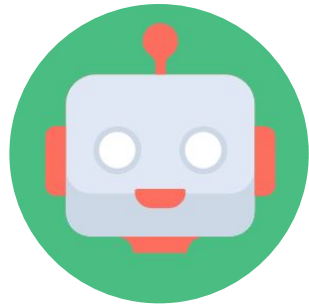
Limited multilingual support



Dependency on predefined questions and scenarios.

We recognized the limitations in our approach and began exploring the possibility of integrating Kem with LLMs to deliver a significantly enhanced and more meaningful experience.

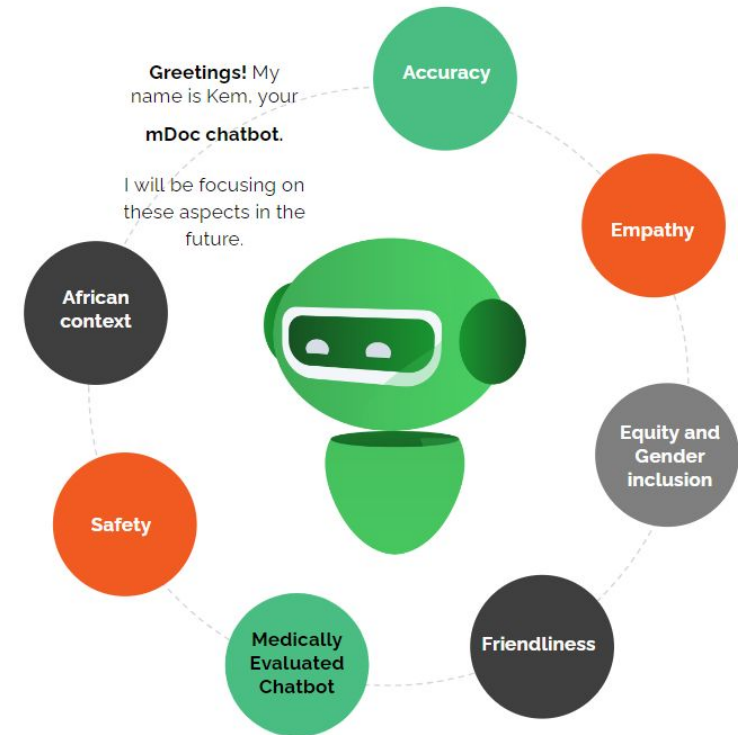
With the advent of generative AI, we have been testing the capability of Kem 2.0 to truly meet people where they are



Kem v1 - rules based chatbot



Large Language Models (ChatGPT 4.0)



Kem 2.0 - LLM based





Objectives

High-Level Aim

To integrate ChatGPT-4.0 into Kem to enhance self-care coaching

1

Improve Kem's ability to respond accurately and empathetically to a wide range of inquiries

2

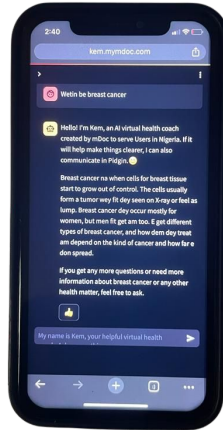
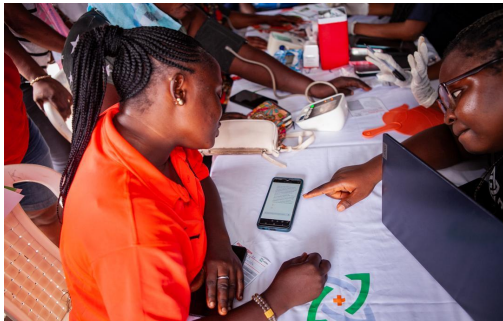
Investigate Kem's enhanced capacity to act as an Intake Coordinator.

3

Evaluate the effectiveness of human health coaches using ChatGPT-4.0 as a resource for addressing questions from members. Highlighting the benefits of ChatGPT integration for both Kem and human coaching support staff.

We're using our datasets reflecting organic conversations between member and coach to train Kem

We are intentional about co-designing with the communities we serve, building and maintaining trust



Rapid cycle test 3

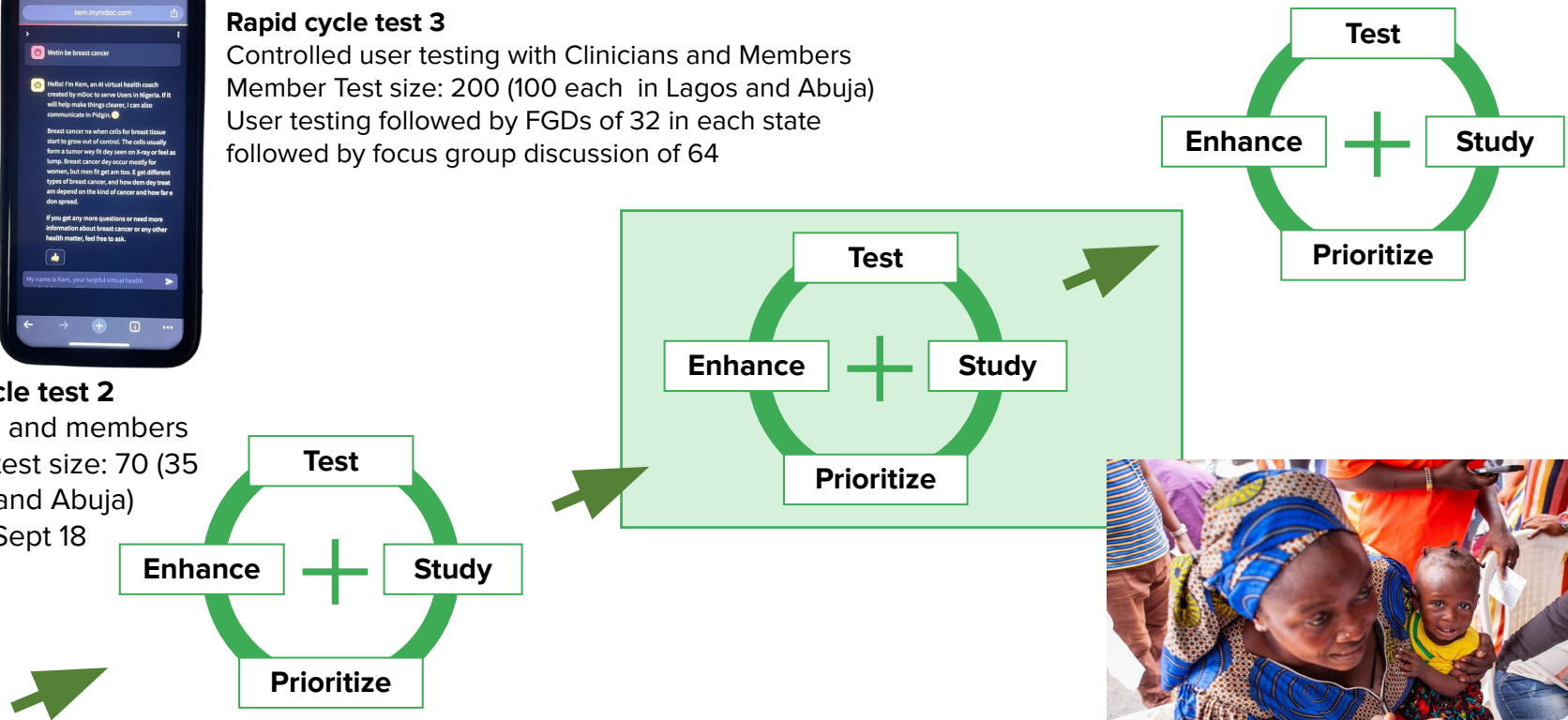
Controlled user testing with Clinicians and Members
 Member Test size: 200 (100 each in Lagos and Abuja)
 User testing followed by FGDs of 32 in each state
 followed by focus group discussion of 64

Rapid cycle test 2

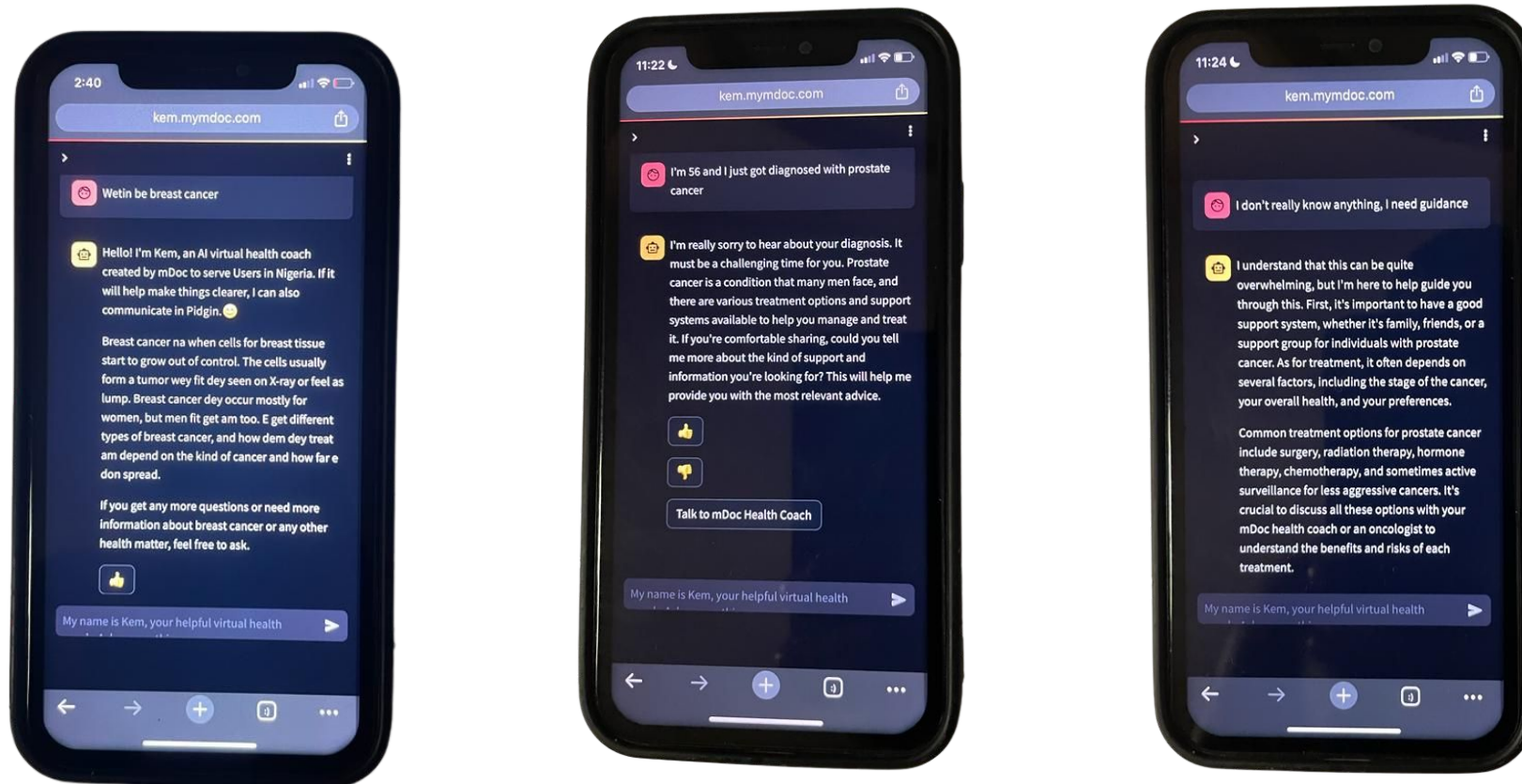
Clinicians and members
 Member test size: 70 (35 in Lagos and Abuja)
 Week of Sept 18

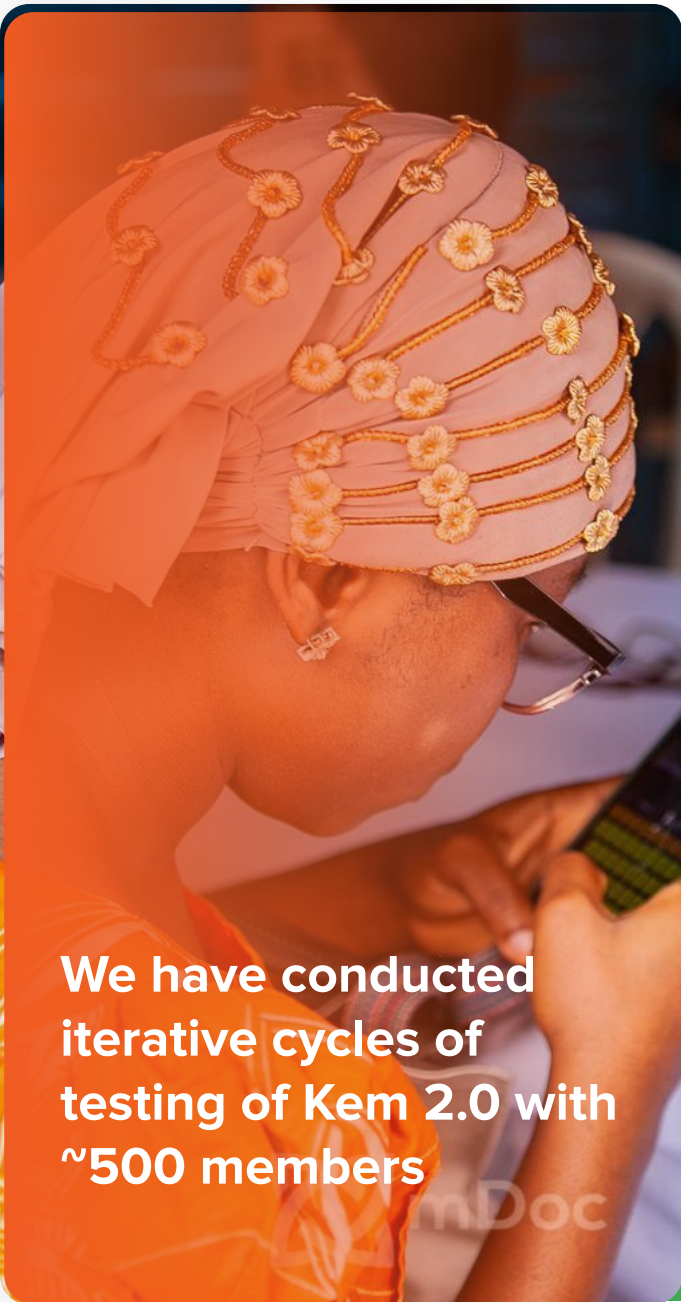
Rapid cycle test 1

Clinicians and members
 Member test size: 35



Deployment - A Snapshot of Kem





We have conducted iterative cycles of testing of Kem 2.0 with ~500 members



Wow, so e fit reply me for pidgin? E make sense!

I like all the answers it gave me. How can I do it on my phone when I get home?

I waited so long. But after the good answers I got, the wait was worth it!

I was worried about having sex after menopause because of infection, but the answer it gave me will make me relax now. I am happy!

It gave me the correct answer. I have done family planning since, and I can advise people. So, I just wanted to confirm what I know already



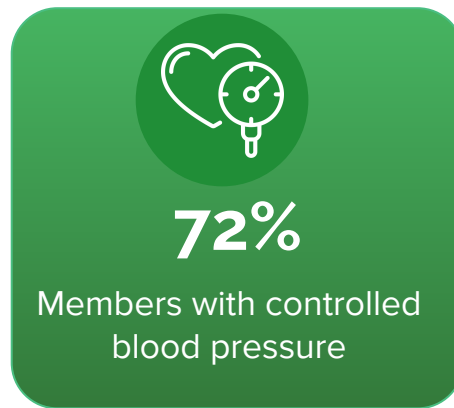
Ah, this answer is too long. I cannot read it, oh. It is plenty.

Can I speak with my voice so that it can answer me? I don't know how to type.

I can only speak Yoruba, but I can't type it. So, I cannot use it.

Given our early results, we are hugely optimistic about the power of AI to revolutionize self-care for people living with cancer in underserved communities.

The coaches are better supported with their AI co-pilot, Kem, to **provide self care support** working hand-in hand with members, caregivers and providers to drive improved health **outcomes**



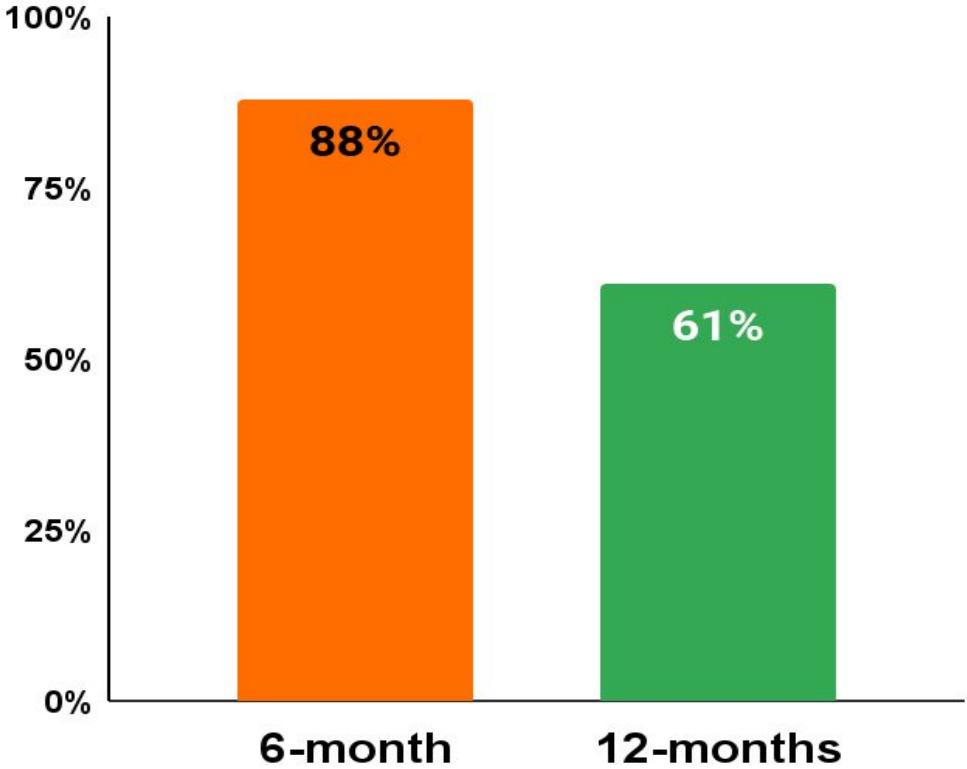
mDoc's Oncology Program




We also support patients living with metastatic prostate cancer helping them navigate treatment cycle completion

88% of patients completed their 6 months duration course of treatment while 16% of the population had a full 12 month course of treatment in the year (2 cycles).

Treatment duration



24



7.94 months

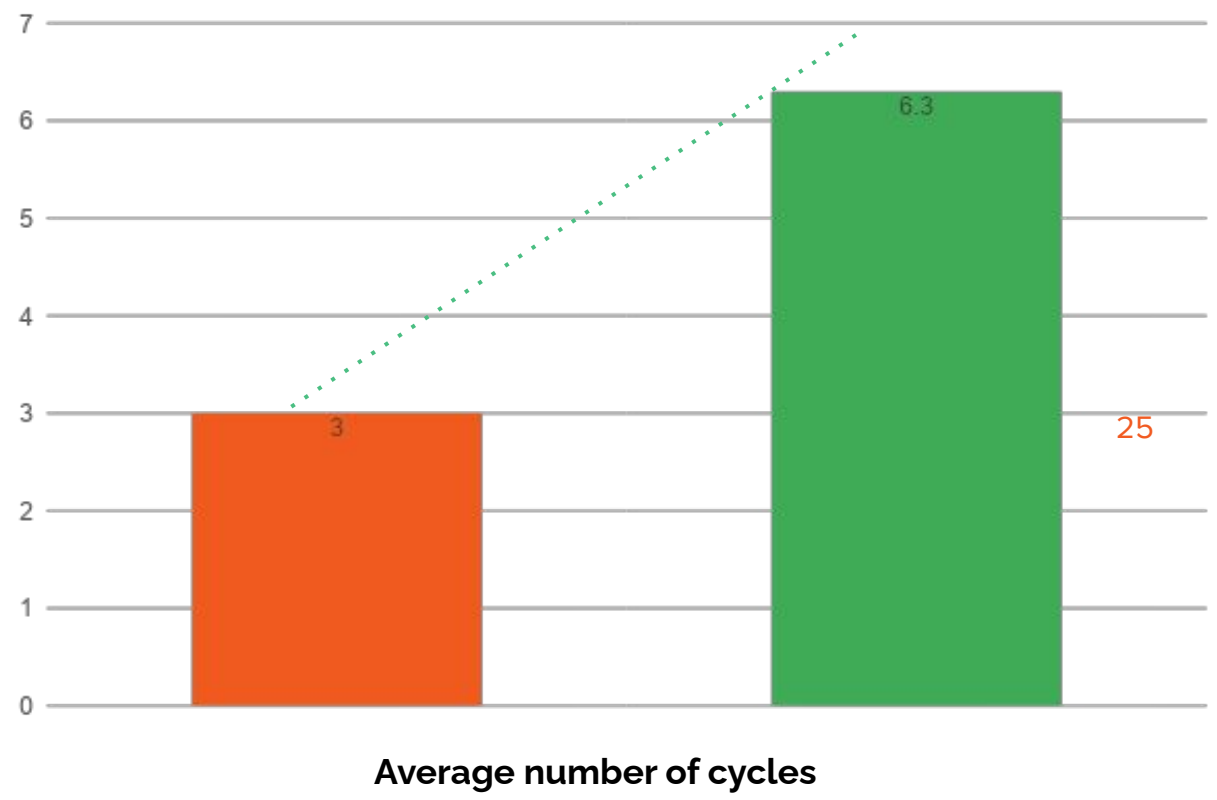
Average treatment duration was 7.94 months in the year 2023 alone for patients on our support program with metastatic prostate cancer compared with the average 5.7 months in global publications.





A 2.1x increase in treatment cycles for members living with breast cancer

○ Average number of cycles taken before mDoc's oncology program ○ Average number cycles taken on mDoc's oncology program



↑ 2.1X Increase in number of treatment cycles for patients on our support program on treatment for breast cancer compared to before they joined the program

Our generative AI journey is teaching us a lot...

1. Building contextual relevance, cultural sensitivity and gender inclusivity into LLMs takes time and iteration
2. Ensuring comprehensive and complete local datasets for training takes investment, a strong multidisciplinary approach, cyclical testing and a recognition of our own biases
3. Experts are critical for pressure-testing, validation and insights into the building process
4. Investing in AI literacy as a subset of digital literacy is key. Developing informed content takes time as people initially did not fully understand capabilities and limitations of AI systems.





The future : Three immediate next steps



Expand our use of AI beyond virtual assistance and personalized coaching care to risk prediction as well as referral navigation.



Incorporating additional African language and voice recognition for seamless Voice-to-Text and Text-to-Speech functionalities, into our system.



Developing AI resources and curriculum to educate individuals on digital literacy, encompassing comprehensive instruction on the utilization of AI chatbots.

THANK YOU



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