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Original Research Article

LiberatePro™ for cervical cancer literacy in Kenya: a real-world insight

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ABSTRACT

Background: Cervical cancer remains a leading cause of cancer-related mortality among women in Kenya. Although largely preventable through early detection, national screening coverage remains low largely due to inadequate awareness, stigma and limited access to tailored health education. The aim of the program was to evaluate the effectiveness of LiberatePro™, a culturally adaptable digital education platform, in improving knowledge, confidence and behavioral intent regarding cervical cancer among Kenyan patients.
Methods: The intervention was implemented across 10 hospitals involving over 200 trained healthcare workers. Participants received condition-specific educational material via secure weblinks sent to them through SMS and email, eliminating the need for any app downloads. A post-intervention survey assessed understanding, ease of content access, value perception, likelihood of behavioral adherence and overall satisfaction.
Results: Following the intervention, 94% of participants reported improved understanding of their condition, with 63.6% noting significant improvement. Approximately 67.2% rated the educational materials as very valuable and 84% indicated they were likely to follow health recommendations. Confidence in managing one's condition rose to 95% and overall satisfaction reached 93%. Most users found the platform easy to access (68.5%) and the content simple to understand (85.7%).
Conclusions: LiberatePro™ demonstrated strong feasibility, acceptability and user engagement. By delivering culturally relevant information without technological friction, the intervention addressed key educational gaps in cervical cancer awareness. These findings support the role of digital health tools in enhancing screening uptake and preventive behavior, although long-term studies are required to measure sustained impact on health outcomes.

Keywords: Cervical cancer, Digital health intervention, Health literacy, mHealth

INTRODUCTION

Cervical cancer (CC), despite being a preventable and treatable condition when detected early, remains a major public health challenge globally.[1] In 2020 alone, an estimated 604,000 women were diagnosed with cervical cancer and approximately 342,000 succumbed to the disease.[2] Strikingly, over one-third of these deaths occurred in sub-Saharan Africa; a region that comprises merely 14% of the world's female population. In Kenya, cervical cancer is the second most common malignancy, with about 5,250 new cases annually, leading to more than 3,200 deaths each year; equivalent to nine women dying every day.[3,4]

To curb this burden, the World Health Organization (WHO) advocates for a comprehensive cervical cancer elimination strategy, including achieving 70% coverage for screening and ensuring that 90% of women with precancerous lesions or invasive cancer receive appropriate treatment. However, in Kenya, the current

screening coverage stands at just 16.81%, underscoring a critical gap in early detection efforts.[4] Numerous factors contribute to this low uptake, including history of abortion, contraceptive use, HIV status, media exposure, recent healthcare visits, educational attainment and community-level socioeconomic indicators. These associations point to the need for nuanced, multi-level public health interventions that address both individual and structural barriers to screening.[5] While awareness of cervical cancer appears relatively low, studies show that approximately 73% of women have heard of the disease, however this awareness does not reliably translate into action. A significant proportion of women remain unaware of key information, such as the recommended age for initiating screening or the role of human papillomavirus (HPV) as the primary etiological agent. This knowledge gap perpetuates low engagement in preventive services and delays in seeking care.[6]

In recent years, digital health innovations have emerged as promising tools to bridge these gaps. Mobile health (mHealth) interventions particularly those leveraging SMS-based education and communication, have shown potential in improving health outcomes by enhancing patient engagement, facilitating timely follow-up and disseminating critical health information.

In Kenya, several UK-supported digital initiatives are spearheading efforts to improve cervical cancer awareness and screening. For instance, iThemba provides mobile access to screening results, while mSaada empowers community health volunteers (CHVs) to guide HPV self-collection and community-level education. The askNivi chatbot, accessible via WhatsApp and SMS, has reached over 160,000 users, offering interactive, culturally relevant information on cervical cancer prevention. These platforms collectively help to increase screening uptake, promote continuity of care and alleviate burdens on already strained healthcare systems by ensuring equitable access to reliable information.[6-8]

Among the noteworthy innovations is LiberatePro™. This platform enables healthcare providers to deliver culturally tailored, disease-specific educational content across multiple languages, which can be shared before, during or after clinical consultations. Importantly, it improves patient comprehension and decision-making without extending consultation time.

For patients, LiberatePro™ offers accessible, personalized information without requiring app downloads, even accommodating those with learning difficulties. Already implemented across 10 hospitals, it aligns with national campaigns like Cervical Cancer Awareness Month and the Ministry of Health's advocacy for HPV vaccination and screening, supporting Kenya's broader prevention and education agenda. In light of these developments, this study aims to explore the potential of a digital educational application to enhance cervical cancer awareness among patients in Kenya.

METHODS

Study design

This was a prospective, patient-based survey, conducted to understand the impact of digital educational application, structured across three phases spanning from December 2024 to April 2025. This study was conducted across 4 Kenya-based hospitals; Emory hospital, Kisumu Specialist Hospital, Pcea Chogoria Hospital and Tree of Life Healthcare.

Ethical considerations

All study activities, including patient recruitment, data collection, staff training and reporting, adhered to ethical standards approved by relevant institutional and national review boards. The study content was approved by representatives of Ministry of Healthcare, Kenya. The ethical committee approval was also obtained.

Eligibility criteria for patients

Female patients diagnosed with cervical cancer, recruited from four hospitals; Emory Hospital, Kisumu Specialist Hospital, PCEA Chogoria Hospital and Tree of Life Healthcare.

Data procedure

During Reporting Period 1 (1 October–5 December 2024), initial preparatory activities were conducted. A local team was assembled, including a dedicated on-ground staff member to support project operations. This involved recruitment of medical writing and operational staff and collaboration with local partners. Three separate slide decks were developed to support different stakeholder groups. These decks were tailored for local applicability and to align with the planned awareness activities during Cervical Cancer Month in January 2025. Site identification processes were initiated to select locations for pilot testing.

During reporting period 2 (5 December 2024–31 January 2025), the team finalized two sets of slides for doctors/nurses and patients. These materials were validated by the local general physicians, including those within the Ministry of Health, to ensure cultural appropriateness and accuracy. The slide decks were subsequently uploaded onto the learning system for deployment.

Ten pilot sites across various regions of Kenya were identified for implementation. Training sessions for healthcare workers were scheduled, including a planned session targeting approximately 100 healthcare workers at a single site. Feedback forms were developed for distribution to patients. During this period, it was observed that many patients were not technologically savvy, which posed an unexpected challenge. This highlighted the need for structured training of healthcare workers, as gaps in

awareness were also noted among doctors. Many healthcare workers had limited digital literacy; therefore, targeted training sessions and workshops were organized to strengthen their capacity and improve patient support.

During reporting period 3 (1 February–30th April 2025), the learning platform (LP) was rolled out across Kenya, reaching ten hospitals and medical facilities and training over 200 healthcare workers. A consultant was engaged to support ongoing activities and partnerships with implementation and innovation organizations were strengthened. Alignment with Ministry of Health guidelines continued, with slide content adapted accordingly. Feedback forms were distributed to around 250 patients via WhatsApp, emails and google survey forms to collect user insights on the system. Training delivery to healthcare workers focused on ensuring familiarity with the platform to facilitate smooth roll-out. The pilot roll-out was commenced as scheduled and was reported to be successful. A site visit was conducted by a project lead to review activities, engage with facilities and assess project progress. Out of the ten hospitals assessed, four that demonstrated strong interest in using LiberatePro™ were selected. These hospitals were provided with the necessary resources, their healthcare workers were trained accordingly and additional support was offered in the form of monthly stipends and laptops to facilitate implementation.

Learning platform

LiberatePro™ is a web-based digital patient education platform developed by clinicians with patient input to improve health literacy. It provides validated, disease-specific content that healthcare professionals can share with patients before, during or after consultations via a secure, HIPAA- and GDPR-compliant link. Patients or caregivers can access this information at home in their own time without needing to download an app.

The platform offers patient-centered educational material that is available in multiple languages, incorporates written, video, animation and pictorial formats and can be shared with caregivers and family members. Designed with simplicity in mind, LiberatePro™ presents content at an easy-to-understand reading level with supportive images, enabling patients to revisit and comprehend information at their own pace. The language is written at a Year 6 reading level (equivalent to Grade 5 in the US) for better understanding. Healthcare workers can also share voice notes with patients, providing reassurance and a sense of personal connection, which may enhance patient confidence and engagement with care. This helps overcome the challenge of complex medical terminology used in clinics, leading to better awareness, adherence and compliance.

For healthcare professionals, LiberatePro™ provides approved, regularly updated content that can be easily accessed and annotated with patient-specific instructions or voice recordings. These features allow clinicians to personalize education without extending appointment times. The platform also supports paperless workflows and integrates seamlessly with systems such as SystemOne and EMIS through single sign-on, making it a scalable solution for both individual consultations and wider population health education programs. The process is straightforward; clinicians access LiberatePro™ on any internet-enabled device, select the relevant preloaded disease-specific content, add notes or recordings as needed and send a secure link to the patient. Patients can then review the trusted material and any personalized instructions at their convenience, ensuring continuity of understanding beyond the clinic visit.

Statistical analysis

Descriptive statistics were used to summarize responses across various domains, including content comprehension, accessibility, usefulness, confidence and satisfaction. Categorical data were presented as frequencies and percentages. No inferential statistical tests were performed, as the primary aim was to assess user perceptions and usability outcomes.

RESULTS

A total of 250 patients were included in this study. The age group of patients was 25-55 years.

Baseline understanding of condition

Before using Liberate Pro, participants had limited understanding of their condition; 16% reported understanding their condition "a great deal", substantial proportion of 14.8% reported minimal understanding, with 34.8% understanding it "a little" and 34.4% not understanding it at all.

Change in understanding after using liberate pro

After engaging with Liberate Pro; 63.6% reported their understanding had significantly improved. 30.4% reported some improvement. Only 1.6% noted no change and 4.4% felt their understanding was worse than before.

Ease of understanding content

Participants largely found the content accessible; 36.3% rated it "very easy" to understand and 49.4% rated it "easy". Minimal difficulty was reported, with 4.8% finding it slightly difficult and none reporting it as very difficult.

Perceived value of educational materials

The educational materials were perceived as highly valuable; 67.2% rated them as "very valuable". 24.8% rated them as "somewhat valuable". Only 0.8% felt they were "not really valuable" and none found them entirely unhelpful.

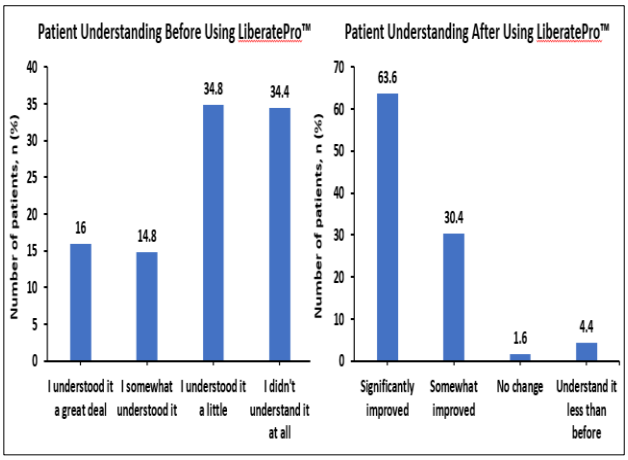

Figure 1: Patient responses before and after using LiberateProTM.

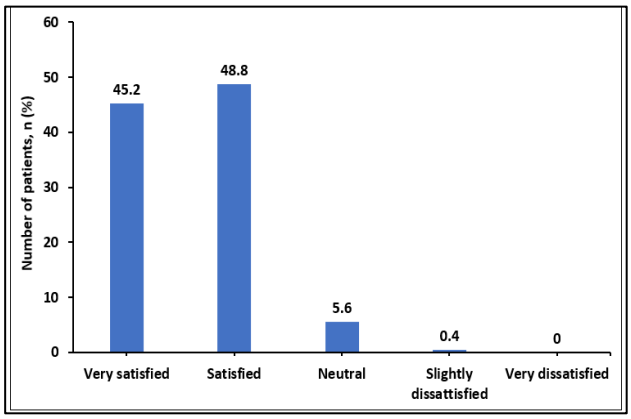

Figure 2: Satisfaction with overall experience.

Ease of access

Regarding access via the provided link; 29.5% found it "very easy" and 39% "easy". However, 13.5% found it "somewhat difficult" and 3.2% "very difficult", indicating some scope to improve access pathways.

Likelihood of following recommendations

Participants showed strong intent to implement recommendations; 49.2% were "very likely" to follow them and 30.2% were "somewhat likely". Only 8.8% were unlikely to follow recommendations.

Confidence in managing condition

After reviewing the content; 60.3% felt "very confident" and 34.5% felt "somewhat confident" in managing their condition. Less than 1% reported no confidence, demonstrating a substantial improvement in self-efficacy.

Appropriateness of content frequency

Most participants felt the frequency was appropriate; 73.2% felt it was "the right amount". 24.8% would have preferred more frequent updates, while only 2% felt the content was excessive.

Overall satisfaction

Satisfaction with the overall experience was high; 45.2% were "very satisfied" and 48.8% "satisfied". Only 0.4% were "slightly dissatisfied" and none were "very dissatisfied". All these results are summarized in Table 1.

Table 1: Demographic characteristics of patients.

Parameter	No. of patients (n=250)
Age (years) 25-55	250 (100.0)
Pcea chogoria hospital	105 (42.0)
Tree of life healthcare	83 (33.2)
Emory hospital	49 (19.6)
Kisumu specialist hospital	13 (5.2)

Table 2: Responses recorded from patients.

Question	Response	%
How easy was it to understand the content provided?	Very easy	36.3
	Easy	49.4
	Neutral	9.6
	Slightly difficult	4.8
	Very difficult	0
How valuable did you find the educational materials in managing your condition?	Very valuable	67.2
	Somewhat valuable	24.8
	Neutral	9.6
	Not really valuable	0.8
	Not useful at all	0
	Very easy	29.5

Continued.

Question	Response	%
How easy was it to access the educational materials via the provided link?	Easy	39
	Neutral	14.7
	Somewhat difficult	13.5
	Very difficult	3.2
How likely are you to follow the recommendations provided in the educational content?	Very likely	49.2
	Somewhat likely	30.2
	Unsure	11.9
	Somewhat unlikely	4.8
	Very unlikely	4
After reviewing the educational content, how confident do you feel in managing your condition?	Very confident	60.3
	Somewhat confident	34.5
	Neutral	4.8
	Not confident at all	0.4
Do you feel the frequency of the educational content sent to you was appropriate?	Yes, it was the right amount	73.2
	No, I would have liked more frequent updates	24.8
	No, I received too much content	2

DISCUSSION

This study provides valuable insights into the potential of culturally sensitive, digitally mediated educational interventions to enhance cervical cancer awareness in resource-constrained settings such as Kenya. The digital platform, LiberatePro™, was designed with linguistic and cultural adaptability at its core, enabling delivery of personalized health education that resonated with diverse patient populations. Such tailored inclusivity was instrumental in fostering health equity and demonstrated potential for scalable, context-appropriate implementation.

The intervention was implemented across ten healthcare facilities, engaging over 200 trained healthcare workers, thereby reflecting both feasibility and high acceptability in routine clinical environments. These operational outcomes contributed meaningfully to the generalizability of the findings across similar healthcare settings. Following the educational engagement, 94% of participants reported a better understanding of their condition, with 63.6% indicating substantial improvement. These findings suggest that the educational content was not only accessible but also efficacious in improving health literacy, an essential component in preventive oncology.

Kenya has aligned with the WHO 90–70–90 targets to eliminate cervical cancer by 2030, emphasizing HPV vaccination, screening and timely treatment.[9] A major barrier to achieving these goals, however, remains low awareness, misinformation and high loss-to-follow-up across the care continuum. LiberatePro™, by providing validated, multilingual and easily accessible digital education tailored to patients and caregivers, has the potential to directly address these barriers. Through pre-consultation myth-busting, simplified instructions for HPV self-sampling and personalized post-treatment guidance, the platform can improve comprehension, adherence and continuity of care without adding time pressure on providers. By reducing missed appointments and strengthening informed decision-making, LiberatePro™ could serve as an enabling tool to support Kenya's Ministry of Health in accelerating progress towards the 90–70–90 targets and the broader goal of cervical cancer elimination by 2030.

The fact that 29.5% of users reported accessing the platform as "very easy," and 39% as "easy," while 13.5% found it "somewhat difficult" and 3.2% "very difficult," highlights that despite overall acceptability, digital literacy constraints and infrastructural limitations remain tangible barriers.[10] This aligns with broader evidence from sub-Saharan Africa, where limited digital skills and poor network connectivity have been repeatedly documented as key obstacles to effective mHealth adoption.

A systematic review of mHealth implementations in Kenya and the broader region underscores that digital literacy and infrastructure gaps, including inconsistent internet and device access that pose substantial challenges to sustained use. Similarly, reviews of digital interventions across LMICs attribute the high rates of user difficulty to limited connectivity, low literacy and design complexity, especially in under-resourced settings.[10,11]

High levels of user engagement and satisfaction were also observed, with 93% of participants expressing overall satisfaction, 84% indicating a likelihood to adhere to medical recommendations and 95% reporting greater confidence in managing their health. These metrics highlight the intervention's potential to influence positive health behaviors and patient empowerment. Notably, the platform circumvented the often-cited barrier of app downloads, employing secure hyperlink-based access that preserved privacy while accommodating populations with limited digital literacy. The timing of deployment,

coinciding with Kenya's Cervical Cancer Awareness Month and aligned with WHO targets for screening and treatment, further enhanced its relevance to public health objectives and policymaking. Further exemplifying digital reach, the mSaada mobile application, implemented in Kisumu County in 2019, empowered community health volunteers to guide HPV self-sampling. The app has since facilitated the screening of approximately 25,000 women, including more than 8,000 within a six-month period, an indication of its substantial impact on access to cervical cancer screening at the community level.[12,13]

Cumulatively, the growing body of evidence suggests that digital and mobile health interventions have contributed to measurable gains in cervical cancer screening, timely communication of results and adherence to care pathways within Kenya. However, while these preliminary outcomes are promising, they also underscore the need for rigorous longitudinal studies, including randomized controlled trials, to more precisely determine their impact on key health outcomes such as increased screening uptake, early-stage diagnosis and eventual reductions in cervical cancer related morbidity and mortality. LiberatePro™, through its culturally attuned and operationally seamless approach, emerges as a promising complement to these ongoing efforts. Its unique integration into public health frameworks may help bridge existing gaps and meaningfully advance cervical cancer awareness and early detection initiatives in Kenya.

While the intervention demonstrated promising results, several limitations must be acknowledged. The study relied on a short-term evaluation window and primarily self-reported outcomes, which may introduce recall or social desirability bias. Additionally, the absence of longitudinal follow-up restricts the ability to assess sustained behavioral changes such as actual screening uptake or reduction in disease burden. The study population, drawn from individuals already engaged with health facilities, may not fully represent harder-to-reach groups with limited healthcare access or digital literacy. Clinical endpoints such as diagnosis stage or treatment adherence were not measured and cost-effectiveness was beyond the study's scope.

CONCLUSION

These findings highlight that simple, well-tested digital technologies can be highly effective in resource-constrained settings. LiberatePro™, already validated in the UK and India, demonstrates how such platforms can strengthen awareness programs, reduce unnecessary visits, minimize confusion and improve adherence and compliance. By delivering linguistically and culturally appropriate content to remote populations, this approach enhances communication and supports continuity of care. Importantly, it advances health equity by addressing persistent gaps in women's health; an area where stronger programs remain urgently needed. While long-term evaluation is required to assess sustained outcomes such as timely diagnosis and reduced mortality, integrating proven digital tools like LiberatePro™ provides a pragmatic pathway to accelerate cervical cancer prevention and improve women's health in Kenya.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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