ecancermedicalscience

'This integration should have started yesterday': acceptability of integrated cervical screening in HIV care among health workers in Kampala, Uganda

Noleb Mugume Mugisha[1,2], Warren Phipps[3,4], Jackson Orem[5], Ruanne Barnabas[6,7,8], Dan Kabonge Kaye[9], and Lynn Atuyambe[1]

[1]Department of Community Health and Behavioural Sciences, School of Public Health, College of Health Sciences, Makerere University, P.O Box 7072, Kampala, Uganda
[2]Department of Community Cancer Services, Uganda Cancer Institute, P.O Box 3935, Kampala, Uganda
[3]Vaccine and Infectious Diseases Division, Fred Hutchinson Cancer Center, Seattle, WA 98109, USA
[4]Department of Medicine, University of Washington, Seattle WA 98195, USA
[5]Department of Clinical Oncology, Uganda Cancer Institute, P.O Box 3935, Kampala, Uganda
[6]Division of Infectious Diseases, Massachusetts General Hospital and Harvard T.H Chan School of Public Health, Boston, MA 02114, USA
[7]Department of Medicine, Harvard Medical School, Boston, MA 02115, USA
[8]Department of Epidemiology, T.H. Chan Harvard School of Public Health, Boston, MA 02115, USA
[9]Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences, Makerere University, P.O Box 7072, Kampala, Uganda

Abstract

Cervical cancer is the leading malignancy among women in Uganda, with HIV infection increasing risk six-fold. We explored the acceptability of implementing integrated cervical screening in HIV care and a modified referral protocol among health workers in Kampala, Uganda. Key informant interviews were conducted with health workers at least 6 months after the introduction of cervical screening and a modified referral protocol in HIV clinics. During data analysis, we applied the theoretical framework of acceptability, with its seven constructs becoming the thematic areas: affective attitude, burden, ethicality, opportunity costs, perceived effectiveness, self-efficacy and intervention coherence.

A total of 23 key informant interviews were conducted with representatives from each category of health workers in the HIV clinics. They all reported strong support for the intervention but identified barriers that must be addressed to increase the acceptability of its implementation. Under the thematic areas of affective attitude, ethicality and perceived effectiveness of implementing the intervention, it was highly accepted. Regarding intervention coherence, prospective acceptability was high among the doctors and nurses/midwives, low among laboratory technicians, medical records officers and counsellors; however, it improved retrospectively. Under burden, opportunity costs and self-efficacy, increased workload, inadequate knowledge and skills and compromising the quality of HIV care were identified as key barriers limiting the intervention's acceptability. Health workers recommended scaling up the intervention while prioritising the mitigation of identified barriers in all HIV clinics for widespread acceptance.

Integrating cervical screening in routine HIV care and modifying the usual-care referral protocol to improve access to referral services for screen-positive women are strongly supported by health workers. However, increasing acceptability and ensuring successful implementation require addressing barriers of staff shortages, limited knowledge and skills and potential compromises to existing HIV care among others. Implementation strategies should include context-specific implementation research, ensuring adequate staffing, targeted training and effective referral protocols.

Keywords: *cervical cancer, HIV care, integration, health workers, acceptability*

Research

Correspondence to: Noleb Mugume Mugisha
Email: noleb.mugisha@uci.or.ug

ecancer 2026, **20**:2247
https://doi.org/10.3332/ecancer.2026.2247

Published: 10/11/2026
Received: 09/04/2026

Publication costs for this article were supported by *ecancer* (UK Charity number 1176307).

Copyright: © the authors; licensee *ecancer*medicalscience. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

Cervical cancer (CC) is the fourth leading cause of cancer-related morbidity and mortality among women worldwide [1]. In Uganda, it is the most common incident and cause of cancer-related deaths, with its incidence projected to increase from 56.2 to 66.1 per 100,000 population between 2020 and 2030 [2]. Women living with HIV (WLWH) have a six-fold increased risk of CC compared to their counterparts without HIV infection [3]. The World Health Organization (WHO) recommends cervical screening, treatment of cervical pre-cancer and referral of women with CC for timely management for this population as part of routine HIV care [4]. However, over half of WLWH in Uganda have never undergone cervical screening [3, 5–7].

Integrating screening services for CC in existing HIV care and improving referral pathways to help women who screen positive access cancer care give this high-risk population an opportunity to receive services they very much need [8–10]. Integration of health services can be achieved in several ways; we chose the addition of a new health intervention to existing services with the intention of continuing to provide them simultaneously [11]. However, this approach relies on the acceptance of the added intervention by the service providers (health workers (HWs)), service recipients (patients) and other essential stakeholders (including managers and other support staff) in the implementing health facilities [12]. While prior research has examined women's (patients') acceptance of integrated cervical screening in HIV care [13], there remains a paucity of information regarding its acceptability among HWs. To address this gap, we conducted key informant interviews (KIIs) with HWs in HIV clinics implementing integrated cervical screening and referral of women with positive screening results using a modified referral protocol to assess their acceptability of implementing the intervention.

Methods

Study design, setting and participants

We conducted KIIs with HWs in two HIV clinics in Kampala, Uganda: Makerere University Joint AIDS Program, Mulago Immune Suppression Syndrome clinic, part of Mulago Hospital on Mulago Hill, and the AIDS Healthcare Foundation – Uganda Cares St. Balikuddembe healthcare centre in St. Balikuddembe (Owino) market. The interviews were conducted after 6 months of implementing cervical screening and referral of women with positive screening results using a modified referral protocol as part of integrated HIV care. The modified referral protocol comprised modifying the usual-care referral form by adding: a) the names and telephone contacts of staff members of the referral and referring health facility, two from each; b) a map showing the physical location of the referral facility and c) standardising the referral instructions which were given to every patient being referred instead of leaving it to the referring HW. The usual-care referral form used in Uganda's public healthcare system does not have this specific information. We allowed 6 months period of implementation before conducting the KIIs to allow the HWs to gain reasonable experience with the intervention by referring women and receiving feedback from some of them. This is because the majority of WLWH who are stable in care with the disease well controlled are followed up every 6 months in Uganda. This is according to the standard of care and the 'Consolidated Guidelines for the Prevention and Treatment of HIV and AIDS in Uganda, 2022' [14,15]. The 6-month period was long enough to give some of the referred women the opportunity to visit the referral facility, Uganda Cancer Institute, and bring feedback to their HIV care providers in the study sites on their next follow-up visits. The participants included representatives of the different cadres of HWs in the clinics. These were medical officers, nurses/midwives, laboratory technicians, medical records officers, professional counsellors and peer counsellors (persons living with HIV (PLWH) who are trained to provide peer counselling to fellow patients).

Data collection

The principal investigator (PI), supported by research assistants, conducted KIIs in designated private rooms within the clinics. We purposefully selected participants, ensuring representation of each cadre of HWs as listed above. The PI approached potential participants, invited them to join the study and all accepted. Each interview lasted 30–40 minutes and was audio-recorded, and field notes were taken. The KII guide was pretested, and the interviews were conducted in English, which is understood by all HWs in Uganda.

Data analysis

The interviews were transcribed verbatim, data cleaned and complemented with information from the field notes to come up with the final transcripts for analysis. We (NMM, DK, JA and AM) iteratively developed codes and code definitions for the first coding cycle. Whenever a discrepancy arose, we each reviewed our individual coding of the specific text segment in question. Then, we discussed it together in the light of study objectives before agreeing on the most appropriate code to assign to the text. Oftentimes, this resulted in us reviewing literature and revising the specific code in the codebook. We coded using the deductive approach. We organised the coded data under the respective codes. On reading through the organised data deeply, we agreed to apply the theoretical framework of acceptability (TFA) of healthcare interventions to obtain a comprehensive interpretation of the data and presentation of results [16]. We refined the codes and their definitions accordingly. The seven constructs of the TFA became the key thematic areas of our final analysis. These are affective attitude, burden, ethicality, opportunity costs, perceived effectiveness, self-efficacy and intervention coherence. We used NVivo 14 software (Lumivero, Denver, Colorado, USA) to support the analysis.

Ethical and regulatory considerations

The study was approved by Makerere University School of Public Health Higher Degrees Research and Ethics Committee-HDREC (IRB00011353), Fred Hutchinson Cancer Center IRB (IR File # 8404), and Uganda National Council for Science and Technology-UNCST (HS1219ES). Written informed consent was obtained from all participants.

Results

We conducted 23 out of the estimated sample of 28 KIIs to attain data saturation. The majority of the participants were female (69.6%), median age was 35 years (range 25–51), median period of working in HIV care was 6 years (range 1–15), 7 (30.4%) of them had received in-service training in cervical screening and none (0%) had ever used the modified referral protocol before this study. The different categories of health workers were represented among the participants (Table 1).

Table 1. Characteristics of participants (key informants [health workers]).

Characteristics	Total (*N* = 23)
Sex, n (%) Female: Male	16 (69.6%): 7 (30.4%)
Age (years), median (range)	35 (25–51)
Years of service in HIV care, median (range)	6 (1–15)
Had in-service training in cervical screening before the study, n (%) Yes: No	7 (30.4%): 16 (69.6%)
Health worker cadre	***n* (%)**
Nursing officer	7 (30.4%)
Medical officer	4 (17.4%)
Medical records personnel	3 (13.0%)
Professional counsellor	2 (8.7%)
Clinical officer	2 (8.7%)
Peer counsellor	2 (8.7%)
Laboratory personnel	2 (8.7%)
Midwife	1 (4.3%)

Source: Primary data

All the participants (HWs in HIV clinics) we interviewed reported strong support for integrated cervical screening in HIV care and referral of women who screen positive using the modified referral protocol to ease access to referral services for them. However, they identified key barriers that must be addressed to enhance acceptability of the intervention. These include inadequate numbers of HWs, gaps in their knowledge and skills to implement the intervention, increased workload and compromised the quality of HIV care. The findings are further presented in detail according to the thematic areas – the seven constructs of the TFA of health interventions.

1. **Affective attitude towards implementing the intervention**

This construct explores how participants feel about the implementation of the intervention. It focuses on the individual's emotional response or reaction. Do they feel happy, annoyed, pleased, etc., rather than their logical thinking? In this study, it refers to how the participants felt about integrating screening services for CC in HIV clinics and referring women with positive screening results using a modified referral protocol. Whether they felt it was good or not. They all felt the intervention was good. According to them, implementing the intervention in HIV clinics brings services closer to the people who need them most. One participant said,

> *'It feels good, I tell you … to know that we are preventing our women from being diagnosed with advanced cervical cancer. In fact, from suffering from cervical cancer since cervical screening actually prevents cancer of the cervix'*(KI, Medical Officer, 5 years in HIV care).

Additionally, almost all participants said that this intervention should have been implemented much earlier and suggested that it should be integrated into other HIV clinics where it is not. Some said they were excited about it; one of them said,

> *'So, if this service has not yet begun in other clinics, it should be introduced because you and me know that HIV is no longer a killer, it's no longer an emergency, it is those other opportunistic infections related to HIV that are emergencies like these cancers, tuberculosis, cryptococcal meningitis. Me, I am very excited that these services are here and should be in all HIV clinics'* (KI, Clinical Officer, 5 years in HIV care).

Additionally, all the HWs we interviewed applauded the modified referral protocol component of the intervention. They said the intervention helped patients with suspected cancer access care at the cancer treatment centre (Uganda Cancer Institute) more easily than when they used the standard usual-care referral approach, and they felt happy they were part of it.

> *'Previously they used to take the referral form at home and come back with it at the next visit yet going to cancer institute would have saved their lives. They always came back with advanced cancers. Now we give them the modified referral letter with a telephone number of someone at Uganda Cancer Institute so that when they reach the Institute, they call, and they are helped. They come back with testimonies because they have someone to help them. This makes me satisfied that we are giving a complete service rather than referring them and they come back at their next visit without being seen at UCI which has been a known chronic problem'* (KI, Medical Officer, 7 years in HIV care).

> *'It is such a nice thing and gives me joy that when I want to send mothers with positive cervical screening results to Uganda Cancer Institute, I have someone who they will call to help them when they reach'* (KI, Midwife, 13 years in HIV care).

2. **Burden of implementing the intervention**

This construct explores the perceived amount of effort required to participate in screening for CC in HIV clinics and referral of women with positive screening results using a modified referral protocol. This is the amount of physical and cognitive effort and time required for an individual to participate in implementing the intervention. All doctors, clinical officers, nurses and the midwife reported that adding cervical screening and referral to the services they provide in HIV clinics increased their workload. This is because they had to provide the services they used to provide before the integration, as well as tasks related to the intervention. They sometimes screened women almost at the end of a working day because they would be doing a lot of other work. Many times, they felt inconvenienced and wished someone else was doing the screening.

> *'Sometimes I finish a day's work and before I go home, I'm reminded that there are women to screen for cervical cancer. It is too much work. It can be so inconvenient that I always wish there was someone whose role is to do the screening only'* (KI, Nurse, 7 years in HIV care).

On probing about employing additional staff, almost all participants recommended it strongly and said they were sure their leaders in HIV clinics would buy the idea.

'They need to station people to do screening, we are all interested in cervical cancer screening, but we have a lot of work, and we are few. I know our bosses will agree. You need to convince them' (KI, Nurse, 7 years in HIV care).

Other cadres of HWs did not express any concerns under this theme.

3. **Ethicality of implementing the intervention**

This is the extent to which the intervention has a good fit with one's value system, which encompasses the individual's core beliefs, moral code, ethics and generally the sense of right or wrong. The intervention fitted well with the value systems of all the participants we interviewed. All the different cadres of HWs said this was because it saves women from advanced CC. Some participants said that they witnessed women with positive screening results identified in the HIV clinics, helped to access timely diagnosis and started on treatment.

*'It is our duty to protect these women from advanced cancer of the cervix. Some of them have been with us for almost ten years, they are our friends … and us knowing they are a high-risk population to suffer from cancer of the cervix makes it unethical to watch them live with the risk, HIV infection and not screen them'. (*KI, Medical Officer, 5 years in HIV care*).*

'I know someone who died of cancer of the cervix and yet screening can discover it early when it can be treated ad cured. Hm! What we are doing is just the right thing for these women' (KI, Midwife, 13 years in HIV care).

Some went ahead to say that, had it been in their means, the intervention in all HIV care services would have been done long ago because it is good for everyone, especially the WLWH.

'They delayed a lot to begin screening for cervical cancer in HIV clinics and providing a clear way to refer those women whose screening results are positive. It is so important that it should have started yesterday. (Opens her mouth for a moment as if thinking of what to say next and says,) *"I wish the service began a long time ago because it has helped us identify women, we suspect to have cervical cancer, we have referred them, the cancer diagnosis has been confirmed, and they have received care". It is good for them and good for everyone, imagine their children, husbands and society generally losing them to death which can be prevented by screening'* (KI, Nurse, 12 years in HIV care).

4. **Opportunity costs of implementing the intervention**

This refers to the alternatives foregone to participate in providing screening for CC in HIV clinics and referring women with positive screening results using a modified referral protocol. The benefits, profits and values that must be given up to engage in the intervention. By participating in implementing the intervention, some nurses and the midwife had to forego the undivided dedication to performing routine HIV care-related tasks, including supervision. This resulted in delays in providing services in general, some patients being disgruntled and some women leaving the clinics without being screened on some days.

'Sometimes you can be doing administrative work and then you have to screen women, which may not be easy for some of us. I no longer have time to supervise and ensure quality services. Sometimes I hear women complaining that they have been denied their HIV drug refills, when I inquire, I am told that it is because they have not been screened for cervical cancer. Then I realize I'm the one who is supposed to screen them. But I must screen them because we are only two staff who have been trained in cervical cancer screening' (KI, Nurse, 7 years in HIV care).

*'Sometimes patients grumble when they wait for too long and some women leave without being screened' (*KI, Midwife, 13 years in HIV care).

The other categories of HWs, including medical officers, did not declare any alternatives forgone to participate in implementing the intervention.

5. **Perceived effectiveness of implementing the intervention**

This is the extent to which implementation of the intervention is perceived to achieve its intended purpose. All the health workers expressed confidence that implementing the intervention achieves its purpose. They all witnessed it provide a platform for CC prevention through education, screening and initiating the process of diagnosis and treatment.

'Yeah! What I have realized since we started this screening, we have diagnosed patients with cervical cancer early and they have been referred to Uganda Cancer Institute for proper management in time. We have enabled our patients understand the importance of undergoing screening for cervical cancer as a way of preventing cancer. For most of our patients at least we have lowered their chances of developing cervical cancer. Reason being, we teach them how to prevent it and the service has been provided freely. You understand?' (KI, Nurse, 12 years in HIV care).

6. **Self-efficacy of implementing the intervention**

This theme refers to the HWs' confidence that they can perform the tasks required of them to participate in implementing integrated cervical screening in HIV clinics and referral of women with positive screening results using a modified referral protocol. A few of the HWs were confident in performing tasks related to implementing the intervention. On probing further, we found that these had received in-service training in cervical screening. Some even expressed their wish that they were relieved of other duties and assigned only cervical screening.

'I underwent training in screening for cervical cancer. I am sure, I do a good job in screening women for cervical cancer. I wish I was relieved of all other duties and assigned cervical screening only (She laughs). I would screen all women in the clinic and even ask them to invite their friends from other clinics. … But you know we are only two in this clinic who underwent the training' (KI, Nurse, 7 years in HIV care).

However, the majority of HWs were not confident, and some did not know how to perform procedures related to the intervention. Some confessed to having theoretical knowledge but no practical skills in performing cervical screening procedures.

One said,

'There is a time when all the three trained people on cervical cancer screening were not around; one was on maternity leave, another one on study leave and the third ... (tried to remember) *I don't remember where she was at the time. We ended up asking the women to come back next time to be screened. I am honest, I cannot do cervical screening though I have a lot of theory in my head. But if we all have the training in skills, we can always work on these clients'* (KI, Midwife, 13 years in HIV care).

Regarding the modified referral protocol, all HWs, even those who were confident in performing screening procedures, said they had no experience of using it and needed specific training to be confident in using it.

'For referral using the new approach, it is good, in fact better than what we have been doing but I think we will all need more orientation in it to do it well and confidently. Although there is nothing majorly new, but every new approach may present different challenges to different practitioners which necessitates a formal training however short' (KI, Medical Officer, 5 years in HIV care).

7. **Intervention coherence**

This theme entails the extent to which the participants understood the intervention and how it works. In this study, it refers to how the HWs we interviewed understood implementation of cervical screening in HIV clinics and referral of women with positive screening findings using the modified referral protocol and how it works. All the doctors, nurses and the midwife said they understood the intervention and how it works to address the burden of CC.

'Providing screening for cervical cancer in HIV clinics is the most strategic way to target women with HIV infection for the intervention. The only way to give each woman who attends this clinic a chance to be screened is to make the screening part of their routine HIV care' (KI, Medical Officer, 7 years in HIV care).

However, responses from laboratory technicians, medical records officers, professional counsellors and peer counsellors show that their understanding of the intervention and how it works was to different degrees. Some said that before the intervention was introduced in the HIV clinics where they work, they did not understand it at all.

'I did not understand how cervical cancer is screened for. I thought it is a type of surgery where the uterus is first brought out and screened. I wondered how this can be done in an HIV clinic. After the overview lecture at the beginning of this project and my experience now, I know that cervical screening is not painful and its benefits. I work hard to assure all the women who I counsel understand that screening for cervical cancer is painless and will prevent them from presenting with advanced stages of the cancer which is the leading cause of cancer death in women' (KI, Peer counselor, 15 years in HIV care).

DISCUSSION

Acceptability of healthcare interventions is best understood as a multi-faceted concept representing the extent to which stakeholders such as patients and providers consider an intervention appropriate based on experienced or anticipated responses [17]. The responses are cognitive and emotional and influence intervention-related behaviours [18,19]. In this study, we assessed the acceptability of integrated cervical screening in HIV care and used a modified referral protocol for women who screened positive among HWs in Kampala, Uganda. To achieve a comprehensive assessment, we utilised the seven constructs of the TFA [20]. Figure 1 shows the key findings and recommendations mapped to the TFA.

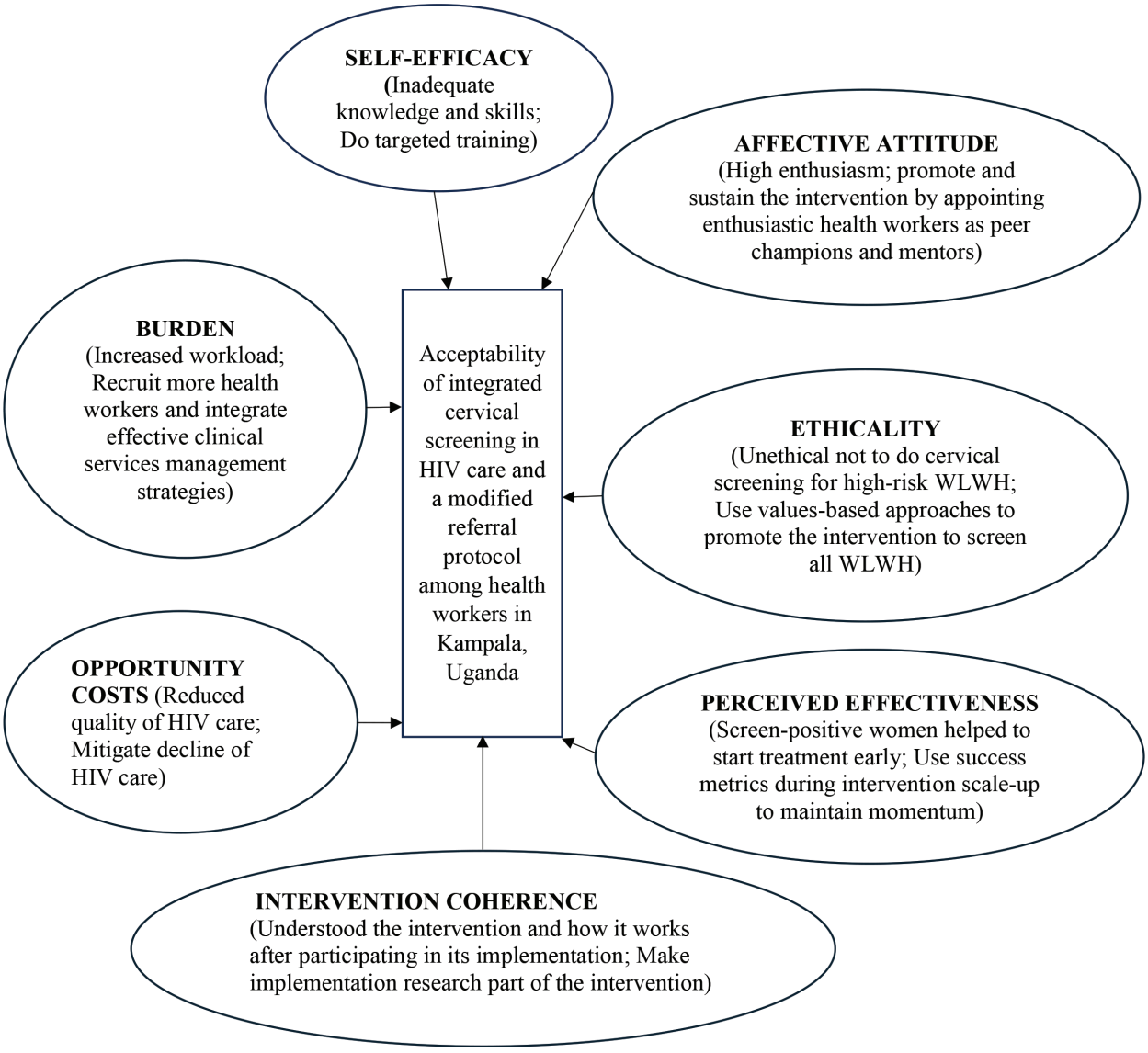


Figure 1. Acceptability of integrated cervical screening in HIV care among health workers, Kampala, Uganda: TFA mapping.

Our findings show that all the HWs we interviewed strongly support the intervention, though they are concerned about barriers that, if unaddressed, could limit its acceptability. Under the themes of affective attitude, ethicality and perceived effectiveness, the intervention was highly accepted by all the HWs. Under intervention coherence, the acceptability among the different cadres of HWs varies. Doctors, nurses and the midwife fully accepted it. However, laboratory technicians, medical records officers, professional counsellors and peer counsellors did not sufficiently understand the intervention and how it works and, hence, did not fully accept it. Under the three themes of burden, opportunity costs and self-efficacy, key challenges were mentioned identified that must be mitigated to maximise the acceptability of the intervention. These include inadequate numbers of HWs, their knowledge and skills to implement the intervention, increased workload and compromising the quality of HIV care.

Our data show that all HWs who participated in this study said that they felt the intervention was a pleasure to have (affective attitude) and, in fact, overdue, fitted well with their values (ethicality) and achieved its intended purpose (perceived effectiveness). These results demonstrate that screening for CC in HIV clinics and using a flexible referral approach to enable women who screen positive to access cancer services will not require convincing health workers that the intervention is good and works. This may imply that HWs in HIV care are ready to implement the WHO recommendation to offer cervical screening, treatment of precancer and referral of suspected CC for timely treatment as part of integrated HIV care for all WLWH [21] if the identified barriers are addressed. These results also suggest that the HWs may support this as 'a moral imperative' (ethicality) and a strategic approach to increase the number of WLWH who access the intervention [22–24]. However, the paucity of published research in the area demonstrates a potential research niche.

Under intervention coherence, our findings from the doctors, nurses and the midwife demonstrate that they understood the intervention and how it works to address the burden of CC. However, for the other cadre of HWs (laboratory technicians, medical records officers, professional counsellors and peer counsellors), it was not until they had participated in implementation of the intervention that they understand it and how it works. Meaning their poor prospective acceptability improved retrospectively. This underscores the importance of implementation studies in integrating this intervention in existing health services [25]. This may confirm that implementation research provides clear pathways to translate evidence into practice [24,26], and this intervention is not different. On a broader perspective, our results suggest that implementation research may be a tool to accelerate progress towards achieving the WHO 90–70–90 targets [27–30].

Under the theme of burden, our results show that inadequate numbers of HWs, increased workload, increased waiting time for patients and the cognitive burden of inadequate knowledge and skills to perform procedures related to the intervention limit its acceptability. These findings are in line with other studies and reinforce the evidence that inadequate human resource and lack of training are barriers to integrating screening services for CC in existing HIV services in LMIC [31–33]. Prior studies done in Uganda also showed increase in patients' waiting time as a barrier to integration of cervical screening in HIV clinics [13]. These data imply that addressing the shortage of HWs and the knowledge and skills gaps should accompany the integration process to minimise the risk of burnout and patients' dissatisfaction [34,35].

Under the theme of opportunity costs, we found that some HWs had to give up the time and effort they would otherwise spend on provision and supervision of HIV care services to participate in implementing the intervention. This may point to a potential pitfall of compromising the quality of HIV care and may result in losing the gains achieved in the fight against the pandemic over the years [36,37]. These are timely findings that should not be ignored in this era when integration of cervical screening in existing HIV care services is being recommended by many authorities [38–40]. Strategies to mitigate the potential negative impact on HIV care must be implemented alongside the intervention.

A major limitation of this study is that the HIV clinics in which we conducted the study are in Kampala city and are geographically located near the cancer referral centre. Therefore, the findings may not be generalisable to rural settings where cancer referral centres may be far from HIV clinics. In addition, the HWs in this study have more frequent access to continuous medical education by virtue of their proximity to health training and research institutions in the city which may not be the case in rural settings.

However, the population we studied had representation of the different cadre of HIV care providers in Uganda, which means that the findings may reasonably represent the degree of acceptability of the intervention among HIV care providers in the country. Additionally, using the TFA enabled us to obtain a comprehensive picture of acceptability of the intervention among the HWs. Our findings also provide a basis for additional studies in integration of interventions in HIV care and integration of health services in general.

These results may imply that integrating screening for CC in HIV clinics and better referral mechanisms for women who screen positive have not been successful in Uganda and other LMIC because limitations in some aspects of its acceptability have not been addressed. For instance, under the theme of self-efficacy, our results show that many HWs were not equipped with sufficient knowledge and skills to implement the

intervention. Similarly, under the theme of intervention coherence, some HWs accepted the intervention retrospectively which may imply that implementation studies should always accompany the integration process to maximise acceptability.

Integrating cervical screening into HIV care and modifying the referral process for women who screen positive to improve access to cancer care is strongly supported by HWs in HIV clinics. However, its acceptability will be enhanced by context-specific strategies. Key recommendations include implementation research to optimise the processes, adequate staffing, targeted training, management of increased workload and mitigation of its negative effects on HIV care.

Acknowledgment

We thank all healthcare providers who took time off their busy schedules to participate in this study. We thank the Kampala City Council Authority (KCCA) director of medical services, management and staff of the HIV clinics in which research activities took place, the Uganda Cancer Institute and the Hutchinson centre research institute-Uganda (HCRI-U) who supported and created an enabling environment for the execution of research activities for this study. We thank Dorothy Kiribata (DK), Joselyn Akamumpa (JA) and Alex Mugerwa (AM) for supporting different aspects of data collection and management as research assistants for this study.

Conflicts of interest

There is no conflict of interest to declare.

Funding

This study was supported by the Hutchinson Center Research Institute – Uganda D43 training grant (D43TW009759), UCI-AfDB training scholarship award (ADM 342/411/01) and Makerere University Research and Innovation Fund, MakRIF4 PhD research grant awards FY 2022/2023.

Author contributions

Conception and design: Noleb Mugume Mugisha, Warren Phipps, Jackson Orem, Ruanne Barnabas, Dan Kabonge Kaye, Lynn Atuyambe.

Collection and assembly of data: Noleb Mugume Mugisha, Warren Phipps, Dan Kabonge Kaye, Lynn Atuyambe.

Data analysis and interpretation: Noleb Mugume Mugisha, Warren Phipps, Dan Kaye, Lynn Atuyambe

Manuscript writing: All authors.

Final approval of manuscript: All authors.

Accountability for all aspects of the work: All authors.

References

1. Pimple S and Mishra G (2022) **Cancer cervix: epidemiology and disease burden** *Cytojournal* **19** https://doi.org/10.25259/CMAS_03_02_2021 PMID: 35510109 PMCID: 9063649
2. Singh D, Vignat J, and Lorenzoni V, *et al* (2023) **Global estimates of incidence and mortality of cervical cancer in 2020: a baseline analysis of the WHO Global Cervical Cancer Elimination Initiative** *Lancet Global Health* **11**(2) e197–e206 https://doi.org/10.1016/S2214-109X(22)00501-0 PMCID: 9848409

3. Ibrahim Khalil A, Mpunga T, and Wei F, *et al* (2022) **Age-specific burden of cervical cancer associated with HIV: a global analysis with a focus on sub-Saharan Africa** *Int J Cancer* **150**(5) 761–772 https://doi.org/10.1002/ijc.33841 PMCID: 8732304

4. Web Annex A (2021) *WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention* (Geneva: World Health Organization)

5. Sarah Maria N, Olwit C, and Kaggwa MM, *et al* (2022) **Cervical cancer screening among HIV-positive women in urban Uganda: a cross sectional study** *BMC Women's Health* **22**(1) 148 https://doi.org/10.1186/s12905-022-01743-9 PMID: 35538482 PMCID: 9092766

6. Vigneshwaran E, Goruntla N, and Bommireddy BR, *et al* (2023) **Prevalence and predictors of cervical cancer screening among HIV-positive women in rural western Uganda: insights from the health-belief model** *BMC Cancer* **23**(1) 1216 https://doi.org/10.1186/s12885-023-11683-8 PMID: 38066496 PMCID: 10709934

7. Anena S, Okello MO, and Ouma RC, *et al* (2026) **Uptake of cervical cancer screening services among women of reproductive age enrolled in HIV care: a facility-based cross-sectional study in rural Northern Uganda** *BMC Cancer* **26**(1) 395 https://doi.org/10.1186/s12885-026-15708-w PMID: 41699516 PMCID: 13019741

8. Cubie HA and Campbell C (2020) **Cervical cancer screening–the challenges of complete pathways of care in low-income countries: focus on Malawi** *Women's Health* **16** 1745506520914804 https://doi.org/10.1177/1745506520914804

9. Goldstein A, Gersh M, and Skovronsky G, *et al* (2024) **The future of cervical cancer screening** *Int J Women's Health* **1715** 1715–1731 https://doi.org/10.2147/IJWH.S474571

10. Alpar AD, Ndiaye C, and Guillaume D, *et al* (2025) **High unmet needs for cervical cancer screening among women living with HIV in six African countries: a population-based study** *Int J STD & AIDS* **36** 09564624251315787 https://doi.org/10.1177/09564624251315787

11. Correia De Matos R, Do Nascimento G, and Campos Fernandes A (2025) **Integrated care: an insight into the national models and their impact on patients and health systems–a narrative review** *J Integr Care* **33**(1) 63–74 https://doi.org/10.1108/JICA-08-2024-0047

12. Chapman A, Buccheri A, and Mohotti D, *et al* (2025) **Staff-reported barriers and facilitators to the implementation of healthcare interventions within regional and rural areas: a rapid review** *BMC Health ServRes* **25**(1) 331 https://doi.org/10.1186/s12913-025-12480-8

13. Ninsiima M, Nyabigambo A, and Kagaayi J (2023) **Acceptability of integration of cervical cancer screening into routine HIV care, associated factors and perceptions among HIV-infected women: a mixed methods study at Mbarara Regional Referral Hospital, Uganda** *BMC Health ServRes* **23**(1) 333 https://doi.org/10.1186/s12913-023-09326-6

14. Namaganda MM, Gennatas S, and Merson L, *et al* (2026) **Decade-long antiretroviral therapy in Uganda: population-health outcomes from a national HIV treatment cohort, 2014–2024** *PLoS Global Public Health* **6**(3) e0005906 https://doi.org/10.1371/journal.pgph.0005906

15. The republic of Uganda MoH (2022) *Consolidated guidelines for the prevention and treatment of HIV and AIDs in Uganda* (Kampala, Uganda: Ministry of Health, Republic of Uganda) [https://health.go.ug/]

16. Sekhon M, Cartwright M and Francis JJ (2018) **Acceptability of health care interventions: a theoretical framework and proposed research agenda** Br J Health Psychol **23** pp 519–31

17. Klaic M, Kapp S, and Hudson P, *et al* (2022) **Implementability of healthcare interventions: an overview of reviews and development of a conceptual framework** *Implement Sci* **17**(1) 10 https://doi.org/10.1186/s13012-021-01171-7 PMID: 35086538 PMCID: 8793098

18. Lott BE, Trejo MJ, and Baum C, *et al* (2020) **Interventions to increase uptake of cervical screening in sub-Saharan Africa: a scoping review using the integrated behavioral model** *BMC Public Health* **20** 1–18 https://doi.org/10.1186/s12889-020-08777-4

19. Sekhon M, Cartwright M, and Francis JJ (2017) **Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework** *BMC Health ServRes* **17** 1–13

20. Paynter C, Mcdonald C, and Story D, *et al* (2023) **Application of the theoretical framework of acceptability in a surgical setting: theoretical and methodological insights** *Br J Health Psychol* **28**(4) 1153–1168 https://doi.org/10.1111/bjhp.12677 PMID: 37353989

21. WHO Health Organization (2023) New WHO recommendations on screening and treatment to prevent cervical cancer among women living with HIV (Hoboken: Wiley)

22. Mungo C, Barker E, and Randa M, *et al* (2021) **Integration of cervical cancer screening into HIV/AIDS care in low-income countries: a moral imperative** *Ecancermedicalscience* **15** 1237 https://doi.org/10.3332/ecancer.2021.1237 PMID: 34221120 PMCID: 8225333

23. Gram EJPN, Moseholm E, and Nørløv AB, *et al* (2024) **Cervical cancer screening integrated in routine clinical care of women with HIV** *Aids* **38**(11) 1648–1657 https://doi.org/10.1097/QAD.0000000000003972 PMID: 38950190

24. Mittal R, Kabel KE, and Fertig MR, *et al* (2025) **Interventions and strategies to increase cervical cancer screening, treatment, and retention in care among persons with HIV in Low-and Middle-Income Countries: a systematic review** *AIDS Behav* **29** 1–14

25. Zullig LL, Drake C, and Check DK, *et al* (2024) **Embedding implementation science in the research pipeline** *Translational Behav Med* **14**(2) 73–79 https://doi.org/10.1093/tbm/ibad050

26. King, Sayner, and Beauchamp, *et al* (2023) **Translating research into rural health practice: a qualitative study of perceived capability-building needs** *Rural Remote Health* **23**(4) 1–10

27. Yadav AK, Patrikar S, and Yadav J (2023) **Implementation research: road map from research to practice** *Med J Armed Forces India* **79**(5) 494–497 https://doi.org/10.1016/j.mjafi.2023.06.005 PMID: 37719906 PMCID: 10499641

28. Gravitt PE, Rositch AF, and Jurczuk M, *et al* (2020) **Integrative Systems Praxis for Implementation Research (INSPIRE): an Implementation Methodology to Facilitate the Global Elimination of Cervical Cancer** *Cancer Epidemiol Biomarkers Prev* **29**(9) 1710–1719 https://doi.org/10.1158/1055-9965.EPI-20-0501 PMID: 32561563

29. World Health Organization (2020) *Global strategy to accelerate the elimination of cervical cancer as a public health problem* (Geneva: World Health Organization)

30. World Health Organization (2022) *Accelerating the elimination of cervical cancer as a public health problem: Towards achieving 90–70–90 targets by 2030, in Accelerating the elimination of cervical cancer as a public health problem: Towards achieving 90–70–90 targets by 2030* (Geneva: World Health Organization)

31. Sigfrid L, Murphy G, and Haldane V, *et al* (2017) **Integrating cervical cancer with HIV healthcare services: a systematic review** *PLoS One* **12**(7) e0181156 https://doi.org/10.1371/journal.pone.0181156 PMID: 28732037 PMCID: 5521786

32. Lott BE, Halkiyo A, and Kassa DW, *et al* (2021) **Health workers' perspectives on barriers and facilitators to implementing a new national cervical cancer screening program in Ethiopia** *BMC Womens Health* **21**(1) 185 https://doi.org/10.1186/s12905-021-01331-3 PMID: 33941159 PMCID: 8090515

33. Adedimeji A, Ajeh R, and Pierz A, *et al* (2021) **Challenges and opportunities associated with cervical cancer screening programs in a low income, high HIV prevalence context** *BMC Women's Health* **21** 1–14 https://doi.org/10.1186/s12905-021-01211-w

34. Makina-Zimalirana N, Bisnauth M, and Shangase N, *et al* (2023) **Workplace wellbeing among health care workers providing HIV services in primary care in Johannesburg: a mixed methods study** *Front Public Health* **11** 1220301 https://doi.org/10.3389/fpubh.2023.1220301 PMID: 38026318 PMCID: 10643173

35. Ferede KG, Ferede AG, and Abdu AM, *et al* (2025) **Barriers and facilitators to the integration of cervical cancer screening and treatment service with antiretroviral therapy follow-up clinics for women living with HIV in Northwest Ethiopia: a qualitative study** *Front Public Health* **13** 1552524 https://doi.org/10.3389/fpubh.2025.1552524 PMID: 40612558 PMCID: 12222219

36. Akullian A, *et al* (2024) **The HIV response beyond 2030: preparing for decades of sustained HIV epidemic control in eastern and southern Africa** *Lancet* **404**(10453) 638–641 https://doi.org/10.1016/S0140-6736(24)00980-2

37. Frescura L, Godfrey-Faussett P, and Feizzadeh A, *et al* (2022) **Achieving the 95 95 95 targets for all: a pathway to ending AIDS** *PLoS One* **17**(8) e0272405 https://doi.org/10.1371/journal.pone.0272405 PMID: 35925943 PMCID: 9352102

38. Sharma K, *et al* (2023) **No woman left behind: achieving cervical cancer elimination among women living with HIV** *Lancet HIV* **10**(6) e412–e420 https://doi.org/10.1016/S2352-3018(23)00082-6 PMID: 37182539

39. Adebamowo C, Rossi PG, Castle PE, *et al* (2025) **Challenges and Opportunities for Global Cervical Cancer Elimination: how Can We Build a Model for Other Cancers?** *Am Soc Clin Oncol Educ Book* **3** e473702 https://doi.org/10.1200/EDBK-25-473702

40. Chidebe RCW, Osayi A, and Torode JS (2025) **The Global Fund, Cervical Cancer, and HPV infections: what can low-and middle-income countries do to accelerate progress by 2030?** *EClinicalMedicine* **81** 103127 https://doi.org/10.1016/j.eclinm.2025.103127